TECHNOLOGY DEPARTMENT

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JUN 10 1947
DETROIT

Flow

... THE MAGAZINE WHICH INTEGRATES MATERIAL HANDLING EQUIPMENT INTO THE FLOW OF PRODUCTION

JUNE
1947

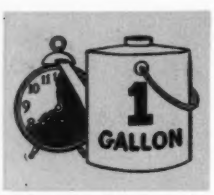
COAL FLOWS on this 40-inch troughed belt a distance of 200 feet, at the rate of 400 tons an hour. The movement is from the rotary car dumper hopper to the breaker for processing. See the article "Coal for the Lights of Cleveland."

SEE FLOW CONTEST ANNOUNCEMENT — Page 62

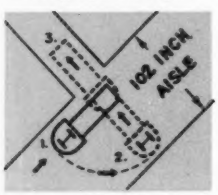
"truck-man Reduced Cost OF MATERIAL HANDLING 30%"

(Operator's statement on file)

Enthusiastic owners report even more startling savings after installing Truck-Man's modern hydraulic lift and speedy power. From small tool and die shops, warehouses, plants covering acres come stories of Truck-Man versatility, economy and dependability. Here are some of the ways it will save YOU time and money:



Users get 8 hours of continuous operation per gallon of gas.



Truck-Man turns in its own length!

9 out of 10 of all shop loads are LESS than 1 TON.

● **Truck-Man lifts and hustles with ease** skidded capacity loads—without dangerous starting and dropping shocks—with sure, fingertip control...

● **Snakes into holes from narrow aisles** —turns in its own length . . . Increases usable floor space . . .

● **Handles easily** with compact, light, simple controls—anyone can operate without fatigue . . .

● **Speeds briskly** on straightaways—creeps in crowded aisles and close squeezes . . . Two speeds forward or reverse . . .

● **Drives on big, dual pneumatic tired wheels** for traction and riding comfort . . . Heavy solids carry load with ample safety factor . . .

● **Stands the gaff** because it's engineered for dependability . . . Volume production and time-proven standard replacements mean low first cost and repairs . . .

● **Cuts costs of fuel, labor and maintenance . . .** And many owners praise the flexibility of their *three* Truck-Man units where they formerly used one heavy costly truck . . . It's easy to buy, economical to own, faithful in service!

Over 70 Truck-Man distributors in principal centers provide standard service.

Ask Any Operator About

truck-man

1418 West Ganson, **truck-man** INC. Jackson, Mich.

BEFORE YOU BUY ANY MOTORIZED HANDTRUCK

Only Transporter GIVES ALL THESE MONEY-SAVING FEATURES!

1. **ONLY motorized hand truck that comes COMPLETE with Standard BATTERY for full day's operation.**
   Benefit: No extra price to pay for battery. Low overall cost of installation including charger. Compare these prices.
2. **THE motorized hand truck whose battery can be charged from a REGULAR ELECTRIC LIGHT SOCKET.**
   Benefit: No installation cost for charging equipment . . . No power line needed. Fully portable . . . charge your Transporter where it works.
3. **THE motorized hand Truck equipped with EITHER electric lift or foot lift. (Optional).**
   Benefit: The right unit for the right application.
4. **Operates at lower cost than ANY OTHER motorized hand truck.**
   Benefit: Pays for itself quicker than any other motorized hand truck.
5. **No complicated control system to manipulate! Easy two-button Thumb-Tip control with foot lift—3 buttons with electric lift. No controls in handle grips.**
   Benefit: Simple one hand, one motion operation, with either hand.
6. **Operator controlled lowering speed.**
   Benefit: Load can be lowered at desired speed; fragile or heavy goods.
7. **Positive Mechanical Brake.**
   Benefit: SAFETY. Most effective brake on any motorized hand truck. Will stop and hold on any incline truck will climb, by raising or lowering handle.
8. **Positive Dead-Man Control.**
   Benefit: SAFETY. When hand is taken off steering handle, it flips back, Transporter stops dead, and current is shut off in two places.
9. **Only motorized hand truck and battery charger that carry the Underwriters Laboratory Seal.**
   Benefit: SAFETY. Neither truck nor charger is a fire hazard.
10. **No grounded circuits.**
    Benefit: SAFETY. Operators need not fear electric shocks.
11. **Light weight, yet engineered and built for full capacity loads.**
    Benefit: More Power per weight ratio than any other motorized hand truck. No oversized battery to carry.
12. **Maximum accessibility to all operating parts.**
    Benefit: All operating parts can be immediately exposed for inspection, adjusting and lubrication. No boxed-in construction.
13. **Steers through more than 180 degrees.**
    Benefit: Easily maneuverable in narrow aisles, close quarters.
14. **World's MOST EFFICIENT—proved by thousands of Transporters now in use in every industry—many more than ALL OTHER motorized hand trucks COMBINED!**
    Benefit: To labor for lightening life's loads—and to management for CUTTING HANDLING COSTS IN HALF!

BUY ON A "SHOW-ME" BASIS OF MONEY-SAVING ADVANTAGES!

MAIL COUPON!

Transporter
A PRODUCT OF AUTOMATIC
Lightens LIFE'S LOADS

ONLY AUTOMATIC MAKES THE TRANSPORTER

MANUFACTURERS OF THE FAMOUS TRANSPORTERS, TRANSTACKERS AND SKYLIFT ELECTRIC TRUCKS

AUTOMATIC TRANSPORTATION COMPANY
DIV. OF THE YALE & TOWNE MFG. CO.
141 West 87th Street, Dept. H-7, Chicago 20, Ill.

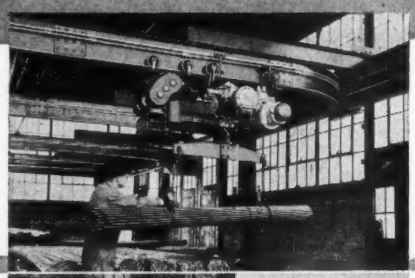
- ☐ Please send the "SHOW-ME" PLAN to check motorized hand truck values.
- ☐ Have an ATCO Specialist make a free survey of my material handling costs.
- ☐ Schedule me for a showing of ATCO'S new film "Pay Loads Pay Off."

Company Name.....
By.....
Street Address.....
City.....State.....

MONORAIL PAYS!!

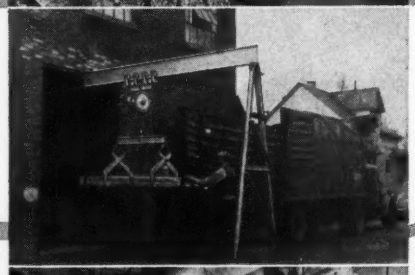
PRODUCTION INCREASE
From 26 to 48 tons per day.

By furnishing definite overhead routes for the movement of bar stock, congestion was eliminated. Free flow of materials to production machines nearly doubled their output.



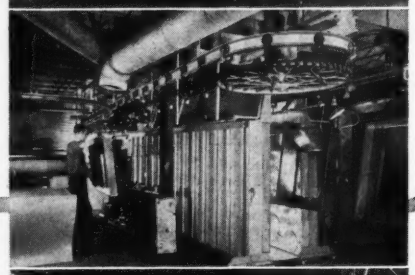
HANDLING COST
Saving of $150 in 4 months.

Transfer of sheet metal from truck to storage is costly when handled sheet by sheet. A simple system such as this actually saved $150 in handling cost within four months.



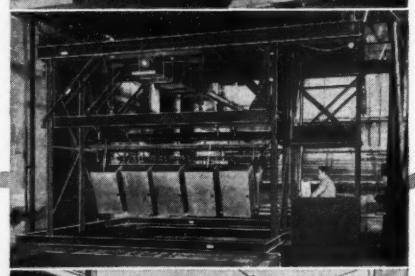
TIME SAVED
Drying time reduced 70%

Passage of metal furnace parts through infra-red dryers cuts 70% from the time formerly required for drying. This operation on monorail also eliminates costly handling labor.



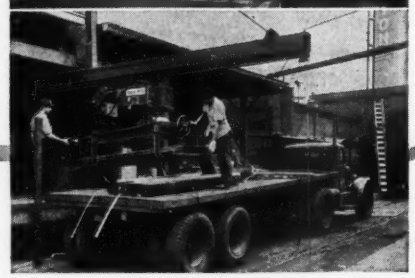
INCREASED CAPACITY
30% more units moved through process

Nearly a third more units can be handled from tank to tank throughout the cleaning process. All handling is controlled from cab by a single operator.



LABOR SAVED
Unloads truck with 26 less man hours.

Operators claim to save $20 per truck over former unloading costs. With power operated equipment and special grab for handling 2-ton loads, complete safety is assured.



Let an American MonoRail Engineer explain how similar savings can be made in your handling methods. Write for Bulletin C-1 showing successful applications.

THE AMERICAN MONORAIL COMPANY

13129 ATHENS AVENUE CLEVELAND 7, OHIO

FLOW

LEWIS-SHEPARD TRUCKS

FAST! SAFE!! ECONOMICAL!!!

100% Electric

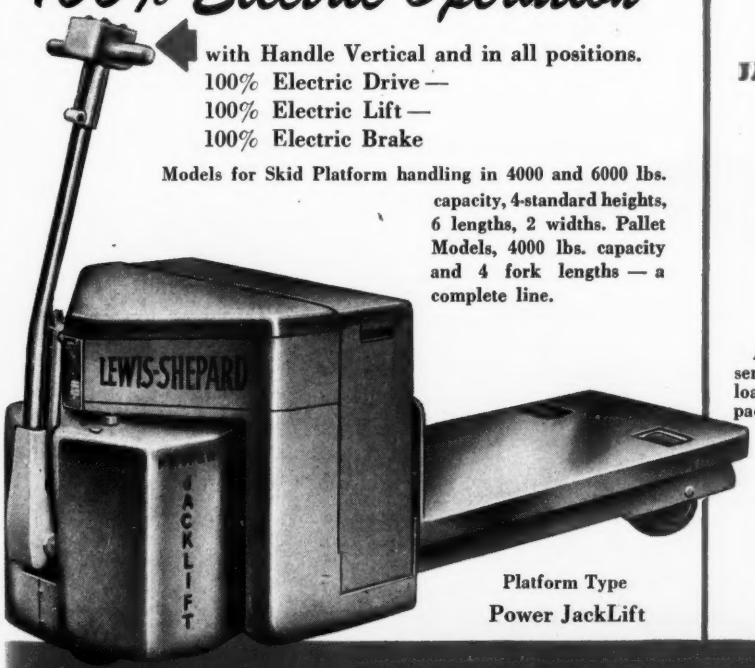
POWER JACKLIFT

This NEW L-S Power JackLift is 100% Electrically operated! Electric Drive, Electric Lift, Electric Brake each completely controlled with handle vertical and in all positions. The ability to operate truck with the handle in every position, provides the operator with a convenient handle-height, at any speed . . . gives him better control of truck at all times. . . . Allows him to maneuver in congested areas and in less floor space. Increases storage space!

100% Electric Operation

with Handle Vertical and in all positions.
100% Electric Drive —
100% Electric Lift —
100% Electric Brake

Models for Skid Platform handling in 4000 and 6000 lbs. capacity, 4-standard heights, 6 lengths, 2 widths. Pallet Models, 4000 lbs. capacity and 4 fork lengths — a complete line.



Platform Type
Power JackLift

L-S
POWER FORK TRUCKS
"Pivot on a Platter"

Save Time and Money, Increase your Storage Space with L-S Fork Trucks. Electric, Gasoline and Gas-Electric Models up to 4000 lbs. capacity. These rugged trucks operate in narrower aisles and right-angle pile in a single quarter turn.

L-S
Hand Operated
JACKLIFTS and HYDRAULICS

An economical investment for long, efficient service. Light in weight and built to carry all loads. JackLifts, 3" lift in 2500 to 5000 lbs. capacity. Hydraulics in both HandLift and Foot-Lift Models, 3500 to 15,000 lbs. capacity with 4" lift or higher.

MULTIPLY MANPOWER
LEWIS-SHEPARD

LEWIS-SHEPARD PRODUCTS INC.

115 WALNUT ST., WATERTOWN 72, MASS.

REPRESENTATIVES IN PRINCIPAL CITIES CONSULT YOUR PHONE DIRECTORY

SINGLELIFTS • HYDRAULIC HANDLIFT TRUCKS • JACKLIFTS • SKIDS • FLOOR TRUCKS • PALLET TRUCKS • STACKERS • PALLET STACKERS
PRODUCTION LIFTERS • CRANES • RACKS • ELECTRIC, GAS-ELECTRIC AND GASOLINE POWERED FORK TRUCKS • POWER JACKLIFTS

IT'S HERE!
the WORKSAVER
Electric Lift Truck

AVAILABLE IN 6 MODELS

LOW LIFT PLATFORM · HIGH LIFT PLATFORM · PALLET
HIGH LIFT FORK · TRACTOR · TIN PLATE

WRITE FOR DETAILS

YALE now offers you a way to achieve greater handling economy and speed than ever before. It's the Worksaver—the electric truck that lifts by power, travels by power. It reduces material handling to little more than a walking and steering operation—takes "muscle money" off your payroll—saves time, saves effort, moves great tonnage per day without muscle strain.

The Worksaver does just what its name means—saves work. And in saving work, it also eliminates wasteful rehandling—cuts cost. The touch of a finger on the dual cam controls located under the handle grip provides two safe forward and reverse speeds. Just shift the convenient lever on the front of the battery box and the load is raised or lowered as desired. It's as simple as that!

Send, today, for all the facts about the powerful Yale Worksaver. Address: Yale & Towne Manufacturing Co., 4530 Tacony St., Phila. 24, Pa.

YALE

WORKSAVER Electric Lift Trucks

CUT PRODUCTION COST... SAVE TIME... SAVE EFFORT... PROMOTE SAFETY

KRON INDUSTRIAL SCALES · HOISTS—HAND AND ELECTRIC · TRUCKS—HAND LIFT AND ELECTRIC

First, **INDUSTRIAL TRUCKS . . .**

Then, **PALLETIZED UNIT LOADS . . .**

Now, **STANDARDIZED**

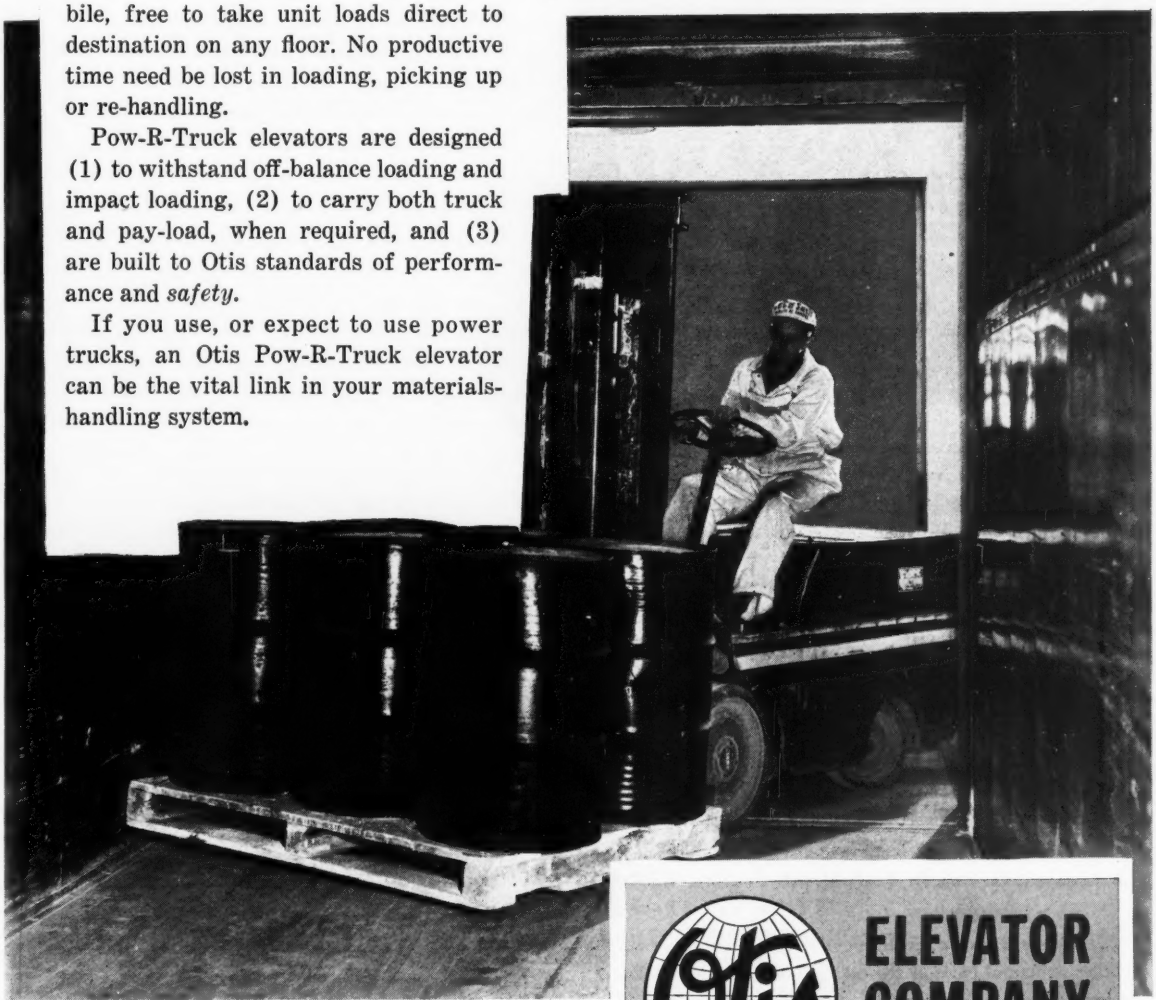
POW-R-TRUCK ELEVATORS!

This latest addition to the Otis line of standardized freight elevators—previously available only as a custom-built "special"—adds *floor-to-floor travel* to the many other time- and labor-saving advantages of industrial trucks . . . effectively increasing their usability.

With a Pow-R-Truck elevator an industrial truck becomes *completely* mobile, free to take unit loads direct to destination on any floor. No productive time need be lost in loading, picking up or re-handling.

Pow-R-Truck elevators are designed (1) to withstand off-balance loading and impact loading, (2) to carry both truck and pay-load, when required, and (3) are built to Otis standards of performance and *safety.*

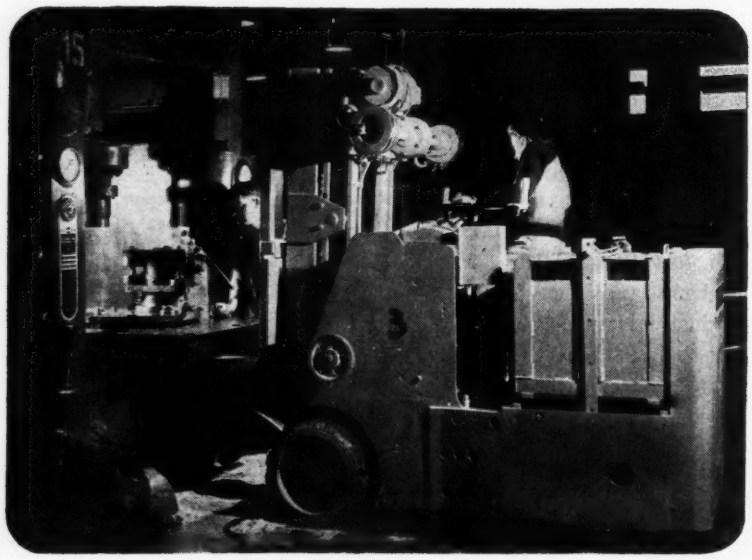
If you use, or expect to use power trucks, an Otis Pow-R-Truck elevator can be the vital link in your materials-handling system.



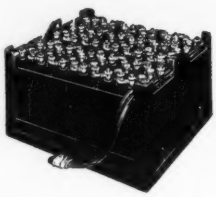
For illustrated folder please address Otis Elevator Company, 260 Eleventh Ave., New York 1, N. Y.

Otis **ELEVATOR COMPANY**
OFFICES IN ALL PRINCIPAL CITIES

Handling Work is **STOP** *and* GO



and Needs Instant-On-Off Power



In replacing a loaded skid box with an empty beside a machine, an industrial truck will make an average of approximately 14 moves forward, backward, up and down. A battery industrial truck has a natural advantage in this kind of stop-and-go service because it gets the necessary surges of power instantly from its battery, yet consumes no power during the stops. Thus it is not only economical of power, but the electricity used for charging its batteries is low-cost power.

Its electric-motor drive operates quietly, without vibration, and thus with well-nigh negligible repair requirements. With batteries exchanged two or three times per 24 hour day, it is continuously supplied with power and, since one battery is charged while the other works, the truck need not stop work for servicing of its power unit.

For 24 hour-a-day material-handling work, therefore, a battery industrial truck is an inherently dependable and economical machine, especially when powered by EDISON Nickel-Iron-Alkaline batteries. With steel cell construction, a solution that is a natural preservative of steel, and a foolproof electrochemical principle of operation, they are the longest-lived, most durable, and most trouble-free batteries. *Edison Storage Battery Division of Thomas A. Edison, Inc., West Orange, New Jersey.* In Canada: *International Equipment Company Limited, Montreal and Toronto.*

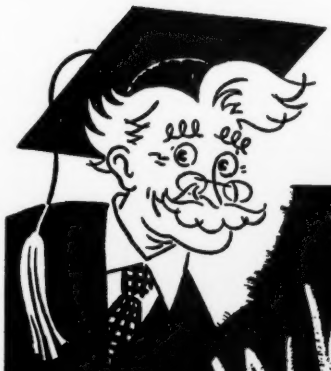
EDISON

Nickel • Iron • Alkaline

STORAGE BATTERIES

In Industrial Trucks, EDISON Nickel-Iron-Alkaline Batteries Give You These Important Advantages.

1. They are **durable mechanically;** grids, containers and other structural parts of the cells are of steel; the alkaline electrolyte is a preservative of steel. 2. They can be **charged rapidly;** gassing cannot dislodge the active materials. 3. They can **stand idle indefinitely** without injury. Merely discharge, shortcircuit, and store in a clean, dry place. 4. They are **simple and easy to maintain.** 5. They **withstand temperature extremes;** are free from freezing hazard are easily ventilated for rapid cooling. 6. They are **foolproof electrically;** are not injured by short circuiting, reverse charging or similar accidents.



Container Quiz

what? why? which? where? when?

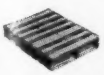
General All-Bound Box

General Nailed Box

General Corrugated Box

General Wirebound Crate

General Cleated Corrugated Container



Generalift Pallet

25 years' experience in designing better containers for all industry.

• The answers to these 5 questions are of vital interest to all those concerned with the better packing of their products.

"WHAT" container will provide better protection, will best ship our products?" We think that General Boxes will provide better and more economical protection for your products.

"WHY?" Because they're designed specifically to the product, as a "Part of the Product."

"WHICH type of container will do the most efficient job?" The answer to this important question is provided by our Engineering Service.

"WHERE is this service available?" For complete information just write our nearest office.

"WHEN?" . . . is best answered by your doing this right now.

ALL TYPES OF ENGINEERED SHIPPING CONTAINERS

25 YEARS YOUNG
1922·1947

GENERAL BOX COMPANY

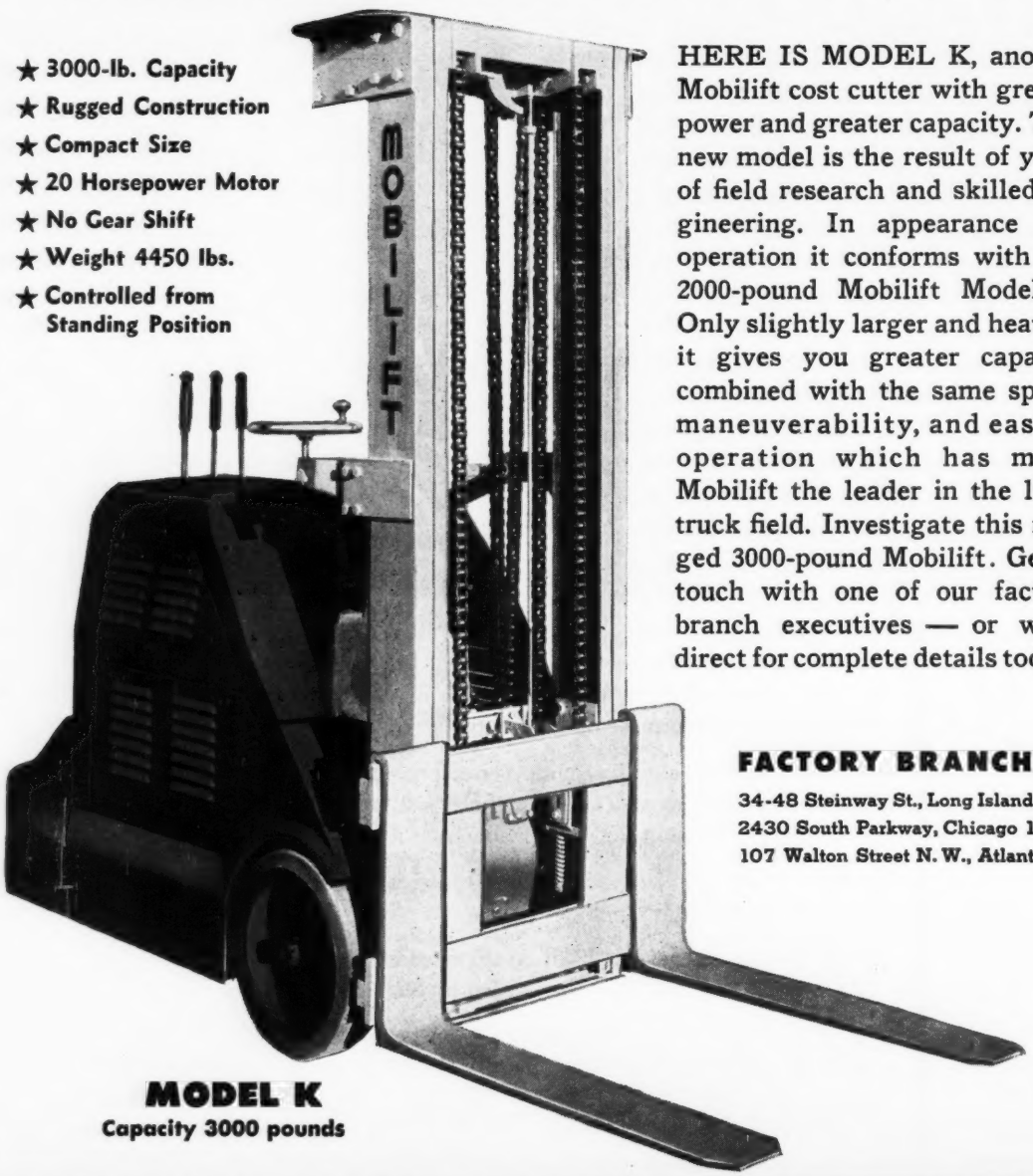
GENERAL OFFICES: 60 West Illinois Street, Chicago 10, Illinois

DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, New Orleans, Louisville, Milwaukee, Sheboygan, Winchendon, Natchez. • Continental Box Company, Inc.: Houston, Dallas.

MOBILIFT *Presents*

A NEW 3000 POUND MODEL!

- ★ 3000-lb. Capacity
- ★ Rugged Construction
- ★ Compact Size
- ★ 20 Horsepower Motor
- ★ No Gear Shift
- ★ Weight 4450 lbs.
- ★ Controlled from Standing Position



MODEL K
Capacity 3000 pounds

HERE IS MODEL K, another Mobilift cost cutter with greater power and greater capacity. This new model is the result of years of field research and skilled engineering. In appearance and operation it conforms with our 2000-pound Mobilift Model F. Only slightly larger and heavier, it gives you greater capacity combined with the same speed, maneuverability, and ease of operation which has made Mobilift the leader in the light truck field. Investigate this rugged 3000-pound Mobilift. Get in touch with one of our factory branch executives — or write direct for complete details today!

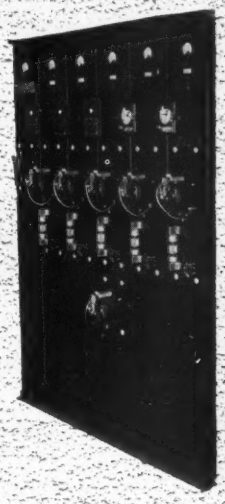
FACTORY BRANCHES:

34-48 Steinway St., Long Island, N.Y.
2430 South Parkway, Chicago 16, Ill.
107 Walton Street N. W., Atlanta, Ga.

MOBILIFT *Moves Materials like a Giant!*

GENERAL EQUIPMENT CO. ★ 835 S. E. Main Street, Portland 14, Oregon

Illustrated from left to right, both with and without protective control covers are: Generator Control Section; Lead-Acid Battery Circuit; Lead-Acid Battery Circuit with Selector Switch; Two-Rate Charging Circuit; Edison Battery Circuit with Selector Switch; and Edison Battery Circuit.



NEW EP *Sectionalized* CONTROL PANELS *for* BATTERY CHARGING

1—**EASY TO INSTALL** . . . Shipped completely assembled, this lightweight panel is simply stood on its intended location and fastened to the nearest wall by two angle-iron brackets.

2—**EASY TO ADD MORE CIRCUITS** . . . Since each section comprises a complete charging circuit, it is only necessary to secure a few frame bolts; extend the main power bus with a jumper; and lengthen the control wires.

3—**STANDARDIZED CONSTRUCTION** . . . Illustrated above are the standard generator control section and the five standardized circuit sections that meet *all* battery-charging requirements, lead-acid or Edison. The panel height of 76″ conforms to the standard height of industrial switchboards.

4—**OCCUPIES LITTLE FLOOR SPACE** . . . Each section measures only 9″ wide. Allowing a 24″ clearance from the supporting wall to permit back-of-board inspection, a five-circuit panel occupies only 9 square feet.

5—**TOTALLY ENCLOSED CONTROLS** . . . All controls are mounted on the front of the board within protecting covers. Dust, dirt and other harmful elements are barred. Covers are easily removed (fastened with only one screw) to permit routine inspection and maintenance.

6—**PROVIDES VISUAL CONTROL OF CHARGING** . . . When indicating lamp at top of board lights, it indicates that the circuit needs attention; either placing a battery on charge or removing the completely recharged battery.

7—**UNIFORM APPEARANCE** . . . Matches the present-day trend toward improved industrial-product design.

This new sectionalized panel simplifies negotiation, ordering and manufacturing. It permits complete standardization. Special engineering is eliminated. The Buyer gets a better product within a shorter time.

Ask for Bulletin 203

EP X-31

THE ELECTRIC PRODUCTS COMPANY

1730 CLARKSTONE ROAD CLEVELAND 12, OHIO

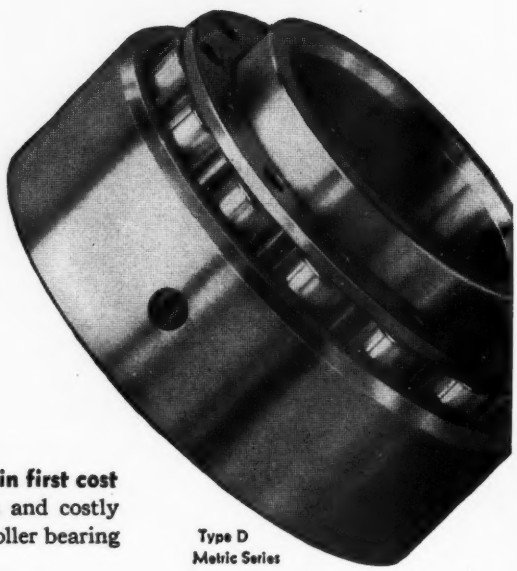
A LOW-COST Bearing, YES!

But NOT A Cheap Bearing

ROLLWAY

Steel-Cage-Type

Roller Bearings



Type D
Metric Series

Rollway Steel-Cage-Type Roller Bearings are lower in first cost because of Rollway's mass production . . . modern and costly precision machinery . . . and 39 years' experience in roller bearing manufacture.

Rollway Steel-Cage-Type Roller Bearings are lower in overall cost — because they can be assembled more cheaply than many other bearings on the market today. Simply press the inner race on the shaft during bench assembly, and place the rollers and outer race in the housing, right on the assembly floor. From your own experience, you can readily see how this assembling saves you both time and labor.

Type A
Planished Sleeve

And what is equally important, Rollway Steel-Cage-Type Roller Bearings are specifically designed to meet the requirements of material handling equipment. They give longer service . . . require less maintenance . . . and stand-up under long tough hours of continuous operation.

Yes, your equipment is easier to sell, easier to run and easier to maintain with LOW-COST ROLLWAY Steel-Cage-Type ROLLER BEARINGS.

Experienced Rollway Engineers can help you *select the exactly right bearing for your particular needs.*

Send us a print or detailed statement of load, speed and operating conditions for FREE Analysis and Recommendation. No charge or obligation, of course.

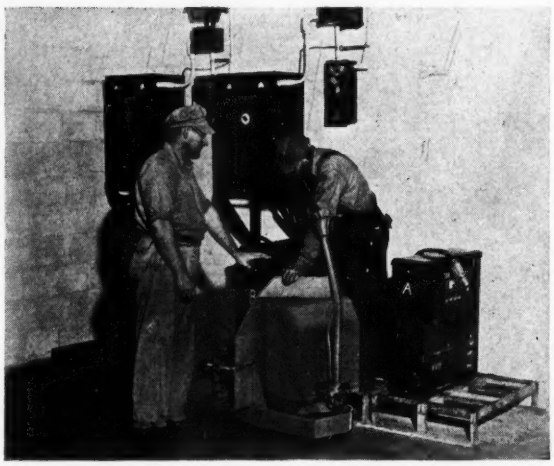
ROLLWAY BEARINGS MEAN BETTER SERVICE AT LOWER COST

ROLLWAY BEARINGS

ROLLWAY BEARING COMPANY, INC., SYRACUSE, N. Y.

SALES OFFICES: Philadelphia • Boston • Pittsburgh • Cleveland • Detroit • Chicago • Minneapolis • Houston • Los Angeles

STRATEGIC SPOTTING OF G-E RECTIFIERS



Individual charging stations are located near truck-operating areas, eliminating long runs to central battery shops.

Motorized hand trucks carry skid loads of paper between packaging, stock, and shipping departments with minimum of waste time and motion.

helps to speed handling of 10,000 inventory items at Nekoosa-Edwards Paper Company

Localized charging stations improve operation of highly mechanized materials-handling system.

With an annual production involving 95 varieties and approximately 80,000 tons of finished paper, this large company has solved many of its complex materials-handling problems by the use of motorized equipment for moving and storing raw materials and finished products.

The use of General Electric rectifiers for charging electric truck batteries is an important part of the over-all operations. Battery stations are located at a number of widely separated key spots, to keep unnecessary truck movement at a minimum. Located at each station is an installation of General Electric chargers, ready to give instant, efficient service whenever needed.

Like many other modern companies, Nekoosa-Edwards has found that the reliable, economical service of General Electric rectifiers keeps maintenance down, and keeps the flow of materials up.

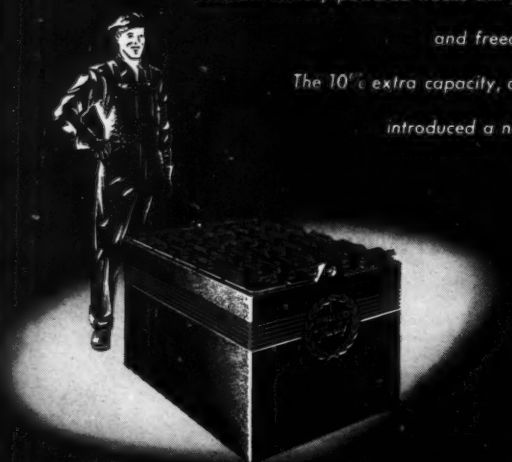
Let us show you how G-E rectifiers can lower costs in your plant, too. Write for a copy of the new *HOW* book today. Section A66-636, Appliance and Merchandise Department, General Electric Company, Bridgeport 2, Connecticut.

USEFUL FREE BOOK—

GENERAL ELECTRIC

Power-up for 'round-the-clock schedules

Modern battery-powered trucks will give you all the capacity you need plus safety, every-day dependability and freedom from maintenance. When all the costs are counted, battery-power costs least. The 10% extra capacity, and longer life of Philco "Thirty" Storage Batteries have introduced a new era in low-cost handling. Write for latest catalog of specification data.



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VOLUME 2, No. 9 JUNE, 1947

Flow

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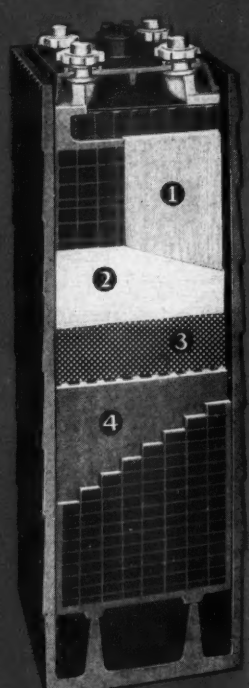

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Are They Peddlers?

They Are Saving American Industry Millions Of Dollars

A FEW weeks ago, at a meeting of material handling engineers which I attended, something rubbed me the wrong way and I want to tell you about it. There was considerable discussion about material handling equipment "peddlers." I resented this deprecatory reference, expressed in a tone calculated to class the professional material handling equipment salesman with those junior canvassers selling magazine subscriptions, carbon paper or novelty items.

It was most unfortunate. While most of the men in that meeting were graduate engineers, they were not "born" material handling engineers. They were engineers who, "by guess and by gosh," were learning something about handling the materials in their own plants. There is no formal course in any engineering school on the specific subject of material handling. Consequently such learning must be acquired either by costly trial and error, or the plant or production engineer must receive some outside help.

Where does such help come from—help that is saving American industry millions of dollars? From the material handling equipment salesmen—from the men who were being called "peddlers." They are saving plants all over the country a fortune by short-cutting costly trial-and-error, by preventing misapplications, by helping design layouts for proper flow, and in many related ways.

The engineers who attended that meeting *should* turn to these salesmen. Why? Because these professional salesmen or sales engineers are better equipped to help than anyone else. They have a broader experience than anyone else, and there is a good reason for it. Practically every week they are called in to work on a different product or problem. One time it will be in a textile mill, the next in a quarry or coal yard or paper mill or a plant manufacturing cosmetics. Hence these sales engineers can be really valuable friends to the man whose responsibility it is to develop material handling procedures for his plant.

Nothing is to be gained by an attempt to depreciate these capable men. To reject their advice because they make their living by selling equipment might mean the loss of valuable aid. Much is to be gained by mutual understanding and respect.

It was said at this meeting that "equipment is not, after all, the end consideration. More often it is the method that is important." That's drawing a fine line, or emphasizing only one of two aspects of the same thing. Without the correct equipment, the most productive or efficient method cannot be realized. It is not a matter of one or the other, but a matter of interdependence between method and equipment. The attempt to separate the two creates a vicious circle—a situation that causes production to suffer.

The man who knows industrial production problems—who has applied equipment and studied it under operating conditions in many industries—knows method. The more expert he is in method the better he functions as a sales engineer. He must know both sides of his business, because that's his bread and butter.

Irving B. Hexter

PUBLISHER

BELOW THE HOOK DEVICES

GRABS at WORK

An article on grabs as "production machines" in last month's issue featured typical grab designs and their principles. This companion article shows grabs "at work" in a variety of plants. — Do your cranes and hoists operate with grabs designed for maximum production?

Figure 1: This motorized grab eliminated a hazardous job, aided production considerably.

THE importance of grabs is being increasingly recognized in hoist and crane operations. When their significance is overlooked or left as a "last consideration," the efficiency of overhead handling equipment can be seriously impaired. Conversely, where the production potential of grabs is recognized in engineering plans, sizable benefits of long-range importance frequently result, among them: 1. Gain of sufficient space to eliminate the need for constructing an annex. 2. A considerable production increase. 3. Elimination of the need for additional handling equipment.

While the previous article in last month's issue was given as a guide for the plant engineer, the present article covers a variety of specific grab applications showing effective crane and hoist handling.

Better Production and Working Conditions

Previous to the purchase of the grab shown in Figure 1, a paper warehouse, it was necessary for a man in the roll pit to attach the simple type of mechanical grab used at that time. With that grab, it was necessary for the operator to climb all over the rolls. This practice tended not only to damage the paper but also to wear out the man who was required to climb to a height of 28 feet and leap from one 40-inch roll to the other.

The present motorized grab made the hazardous climbing job unnecessary. The attachment is operated entirely by the crane operator, who now handles a surprisingly larger tonnage and can store the rolls much closer. The reason is, of course, that space is no longer required for a man to pass between the rolls—just a minimum is now sufficient to accommodate the width of the grab legs. The saving is anywhere from eight inches up for each roll stored in the warehouse. It is not difficult to visualize how many more rolls are therefore stacked in the same space through this saving alone.

Here's another interesting fact about this installation. Although the crane cab is fixed, the operator is nevertheless able by reason of the self-centering attachments built into the grab to locate it over and grip any roll. This is a smooth operation with a crane having a 76-foot span and located approximately 30 feet from the floor.

A photo taken later than the one reproduced here illustrates another advantage of this particular overhead handling. The later photo shows the small (butt) rolls, here still buried among some of the larger ones, all moved up to the top where they belong. Hence they are now first used instead of being lost and ultimately wasted. The crane operator can grip any of these rolls with ease, whereas formerly once a roll was put down the floorman was not inclined to climb all over the uneven stockpiles in order to rescue a butt roll.

From the standpoint of human engineering, as well as that of flow engineering, the use of the present grab has eliminated a hazardous and time-consuming job. As a result, there was not only an appreciable increase in storage space but also a welcome decrease in labor turnover.

Figure 2: Swivel-type hook permits bundles to be piled either lengthwise or horizontally.

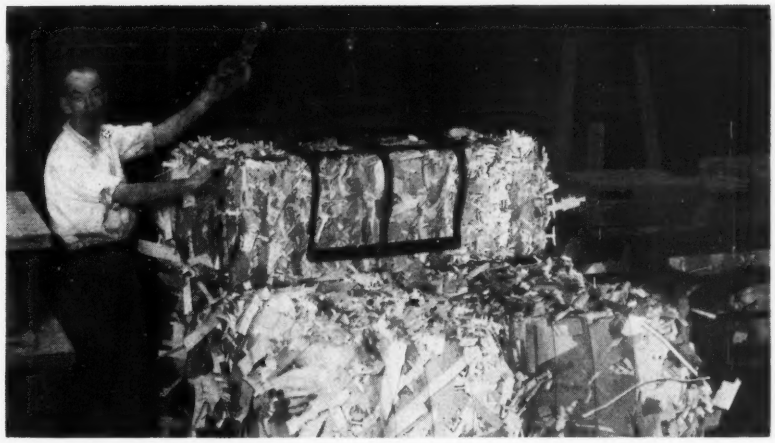

Figure 3: Coordination of hoist handling with platform trucks brought numerous advantages here. See article for details.

A Bundle at a Time

The installation just described involves the use of a motor-driven grab operated from a remote point. However there are cases, as shown in Figure 2, where remote control is not desirable because of the difficulty of hooking on. In this case the hand-operated grab meets all requirements of this sheet steel storage operation: 1. The operator has to be at the load to hook on. 2. When put into storage, the load can also be unhooked by the same operator.

The crane used extends over the track. After the operator has lifted the load he is able by means of the floor control to travel the crane into the storage room. With the former method the sheets had to be handled one at a time.

The modern method is to have the sheets bundled (as shown in the photo) in packages of sufficient weight permitted by the roof structure of the building, or in packages in which the sheets are to be used in process. With the type of grab shown, it is possible to divide the bundle into smaller bundles without having to lift the sheets individually. Since the single hook is able to swivel, it is possible to pile the material either in lengthwise or horizontal stacks or to alternate these.

Although this particular installation was made in the plant of an automobile bumper manufacturer, similar hoist-and-grab combinations are used in such widely divergent operations as: garbage can, refrigerator and stove factories, steel warehouse jobbing plants and many others.

Hoist and On-the-Floor Handling

The interrelation of various types of material handling equipment is indicated in Figure 3. The success of this particular operation depends on the integration of an electric hoist, a grab and a powered truck. Prior to the installation of the hoist and grab shown, the platform truck would move one bundle at a time a distance between 300 and 400 feet. The grab engineer conceived the idea of installing an electric hoist, using a semi-automatic ice-tong type especially designed to reduce breakage of the bales. By this means eight bales are now stacked on each skid platform, enabling the platform truck to move that many at one time instead of the previous one. This has meant a reduction of more than 700 per cent in traveling time.

Figure 4 is another illustration of the flexibility that can result from the coordination of overhead and on-the-floor equipment, also of the adaptability of the grab either to a hoist or crane truck.

In the operation pictured, the

Figure 2: Swivel-type hook permits bundles to be piled either lengthwise or horizontally.

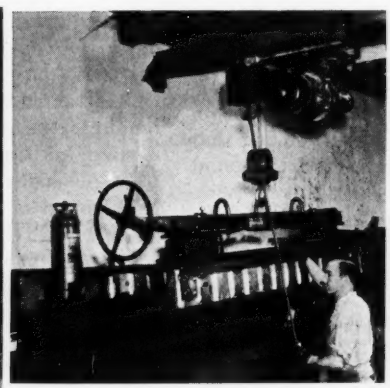

Figure 5: Handling in quantity, safety, economy are features of this bar stock operation.

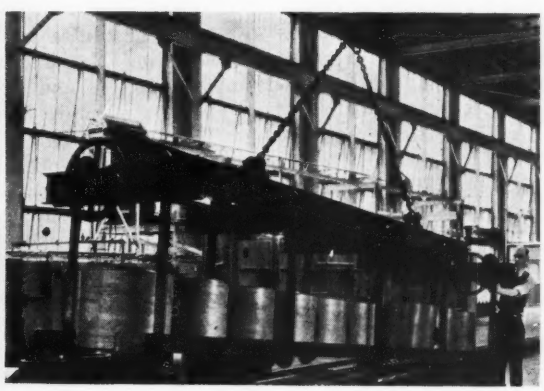

Figure 6: Coordination between crane and conveyor. Grab loads, unloads line with coils.

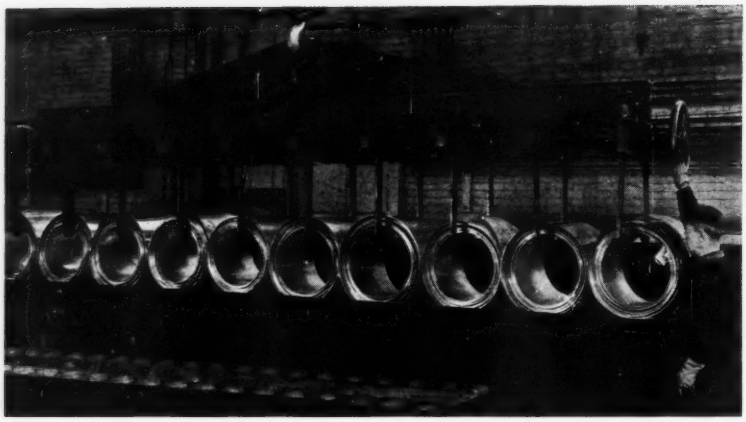

Figure 7: This multi-leg grab transfers the coils from conveyor in rear to line in front.

main storage of the waste paper bales is in a large warehouse, the overflow being kept in the lower building shown in the photo. The larger warehouse lends itself of course to an overhead bridge crane, whereas the relatively lower storage area is well suited to crane truck handling.

The bales weigh 2,000 pounds and are approximately 60″ long by 54″ wide by 20″ deep. The type of grab is semi-automatic because the man on the pile is required to turn the bale for best stacking. When the grab and the bale are placed in position, the crane hook is overrun and the semi-automatic attachment on the grab keeps the latter open so that it can easily be lifted out of place without requiring the operator to do any work other than assisting in the guidance. This grab is also of the multi-leg design, enabling it to pretty well surround the bale. This factor is of considerable importance where bale hooks are not considered desirable. (For example, bales in a damp condition might be torn apart.)

The grab shown tends to compress the bale, keeping the material and the packing intact. The grab principle involved here is a pure lifting effect.

Bar Stock Problem Solved

The solution to an extremely difficult problem is illustrated in Figure 5. Bar stock is received in the customary bundles. The individual bundle is immediately put into the type of container shown, and the straps are cut. More than one bundle can be stored in each container. The total lift possible in this particular case is 4,000 pounds.

The container method helps eliminate the laborious job of putting one bar into a stack at a time and removing the material by the single piece when needed for production. The racks, visible in the background, are of the interlocking type and thus make for live storage. It is possible to lift a complete container-load and move it to processing. Or a few bars can be taken from each of several containers and the material moved in quantity.

The grab in this instance is arranged so that it will grasp the ledge of the container on the inside. (This ledge also serves for tiering purposes of the individual containers, which make up the "live storage" rack.) This feature permits the racks to be placed against each other for support, thus preventing any one stack or tier from being upset.

The adjustment of the grab to the container is obtained by turning the handwheel, moving the legs in and out. As can be seen, this grab has three suspension points. This is due to the fact that the previous crane had two-point suspension. The grab was therefore designed to be handled either on the crane shown in the photo or on another one installed on an upper floor. This latter crane lifts the material off the trucks and lowers it through a hatchway to the storage floor. Note particularly the underhung crane. With this type of installation it is possible to make a transfer directly from the crane to a monorail in the plant, thus delivering the material to the point of use.

When light-weight bars are handled—they tend to bend when manipulated individually—the container method helps decrease waste. (Note the two bent bars hanging over a pipe in the foreground.) While the photo shows this grab handling a 4,000-pound load, grabs of the same design have been made motor-driven in capacities up to 20,000 pounds (used for handling aluminum tubes in containers). An advantage of this container method is that it eliminates the continual rehandling of the individual bars. And in the case of material that cannot be scratched, it also reduces waste considerably.

Crane and Conveyor Handling

The coordination between cranes and conveyors is exemplified in Figures 6 and 7. In Figure 6 the 6,000-pound load of brass coils is picked up and placed on a conveyor by means of a grab which goes under the coils. The conveyor is narrower than the coils and hence the conveyor cannot interfere with the grab legs as they close. Thus the grab can just as readily pick the loads off the conveyor or place them directly on the line without the necessity for intermediate handling. In the operation pictured the material has been taken from the furnace pans, where it has been annealed, and is being transported back to be rerolled to finer gauge.

A similar type of crane-conveyor handling is pictured in Figure 7, but here the grab is of the multiple-leg type. These coils travel down the conveyor from the mill. Instead of having a U-curve at the end of the conveyor, which would require extra floor space, the crane is used for transferring the loads from the higher conveyor (in the background of the photo) to the lower line in the foreground. On the latter the coils are routed to the rerolling operation.

As can be seen, the operator turns the handwheel in order to

(Turn to page 70)

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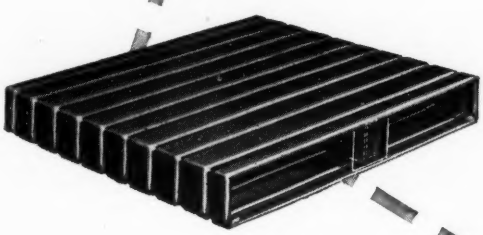

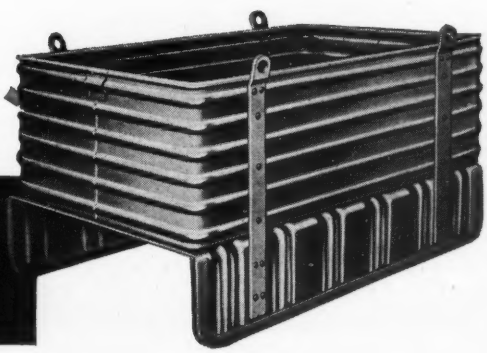

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Acme's Shipping Specialists are located in principal cities. They are ready to work with you to help solve your general or specific shipping problems *without obligation*.

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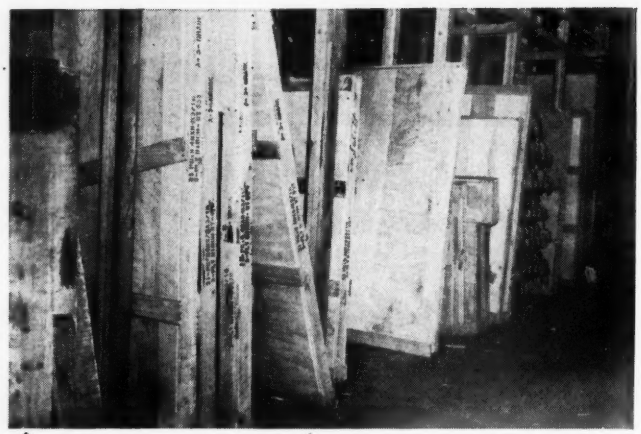
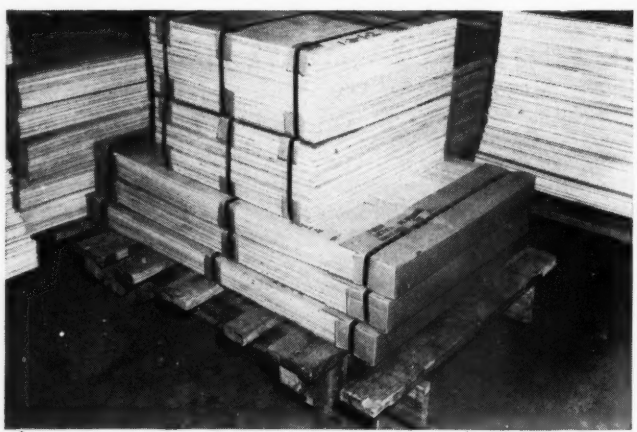
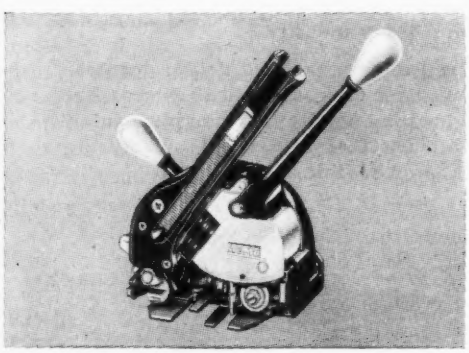


Old crating method—For one size plywood, crate cost $1.39 for lumber and $.375 for labor—a total of $1.765. Total weight, 350 pounds; contents 20 pieces.



Acme Steelstrap and Corrugated Sheets—materials cost per bundle, $.775, and labor, $.075—a total of $.85. The bundle weighs 275 pounds and contains 20 pieces.



More savings ahead for Acme Steelstrap users—No. 3 Steelstrapper, the lightest tool made, is now available. Magazine holds 100 seals. Tensions, seals, and cuts the strap in one operation. Small base requires only 5-inch strapping surface. Two levers working in opposite directions make for better balance and easier handling.

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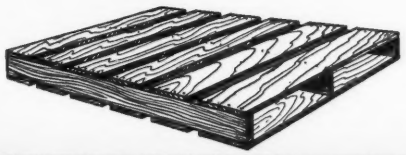
ON THE  PALLET

NEWS · VIEWS · TRENDS

AMONG the papers presented at the Machine Tool Forum, Buffalo, New York, was one on Electric Controls for Multi-Purpose Machines by J. H. Mansfield, Chief Engineer, Greenlee Brothers & Company. This talk pointed out that as much as 40% of the total cost in some types of manufacturing is required for just moving the parts from machine to machine and through the plant.

"The majority of today's production lines are made up of unit machines and roller conveyors," said Mansfield. "The transfer machine combines individual machine tools and roller conveyors into one unit. The operator places the work piece in one end of the machine; it passes from work station to work station, undergoing numerous machining operations without an operator handling the part until it emerges at the other end. The work is automatically located, clamped, and transferred to each machine unit."

Mansfield said that the drop in production is in ratio of 52.45 per hour or 87% for the transfer machines, and from 40:30 per hour or 75% on the individual machine line. "The nearer automatic a production line can be made, the easier it is to maintain a high efficiency," stated Mansfield.

* * * *

HOW American business concerns can consolidate their facilities and organizations to meet foreign trade competition without violation of the Anti-Trust laws is explained and documented in a new book, "International Contracts and the Anti-Trust Laws". Author is Harry Aubrey Toulmin, Jr., of the Bar of the Supreme Court of the United States and president of The Hydraulic Press Manufacturing Company. Eighteen essential factors to be considered in the negotiation and drafting of international contracts are developed in the book.

Typical forms of agreements, indictments, complaints, and decrees, together with the full text of all related anti-trust laws, the Webb-Pomerene Export Trade Act, and coordinate and related acts are included in the book's 1068 pages.

* * * *

MONEY-SAVER idea in a Brooklyn foundry. Eighteen months ago sand was piled in the center of the foundry and molds were set out on the ground. Today, molds travel on roller conveyors. They are then moved onto a transfer car equipped with rollers. The transfer car goes to the shakeout, where sand falls on an apron conveyor and is then carried up to a screen and into a bin. The investment amounted to $5,800.00. The saving in a year from this investment was over $7,500.00—*John C. Somers, Manager, Industrial Products Engineering Co., Long Island City, New York.*

UNIT labor cost is a basic and much-neglected factor in our industrial system. Unit labor cost represents the composite wage-salary rate per hour divided by the average number of units of production per man-hour. If the wage-salary rate alone increases, then the unit cost is increased; if production per man-hour increases, without the wage rate changing, the unit cost is decreased. Or, if the wage rate increases at a greater rate than production per man-hour, the unit cost is increased.—*Quoted by L. E. Osborne, Westinghouse Electric Corp.*

* * * *

CONTRARY to thinking in some parts, the Service Caster & Truck Corp. anticipates no long period of recessive business adjustment, at least not in the material handling field. "During the War, thousands of men were trained by the military in the science of mechanized handling," said President Edward C. Hamm. "These young men are now back in industry, bringing new vision and new ideas to management. Never will these men go back to the backstraining, ponderous handling methods of days gone by. This substitution of skill for sweat, plus the necessity of cost reductions, provides a market for material handling products that will keep our industry going at top-speed for from six to seven years ahead."

* * * *

JOHN A. ROEBLING'S Sons Company announces the death of J. J. Wilson, Seattle Branch Manager, on March 6, 1947. Wilson was born in Lawrence, Kansas, 59 years ago and moved to Seattle in 1905. He was widely known in the mining and logging industries as a wire rope engineer. In this capacity he began his association with Roebling in February, 1920. He belonged to a number of organizations and was a member of the Associated General Contractors of America.

* * * *

THE Mercury Manufacturing Company, Chicago, manufacturers of industrial trucks, tractors and trailers, has announced the following additions to its selling organization.

For the states of Washington and Oregon, the Star Machinery Company, 1741 First Avenue, South, Seattle 4, Washington.

E. L. Harrington, with offices at 93 Massachusetts Avenue, Boston, Mass. for the states of Maine, New Hampshire, Vermont, Rhode Island and Massachusetts.

Paul H. Werres Company, Mercury representative with main offices in Washington, D. C., has announced the opening of a branch office at 216 N. 2nd Street,

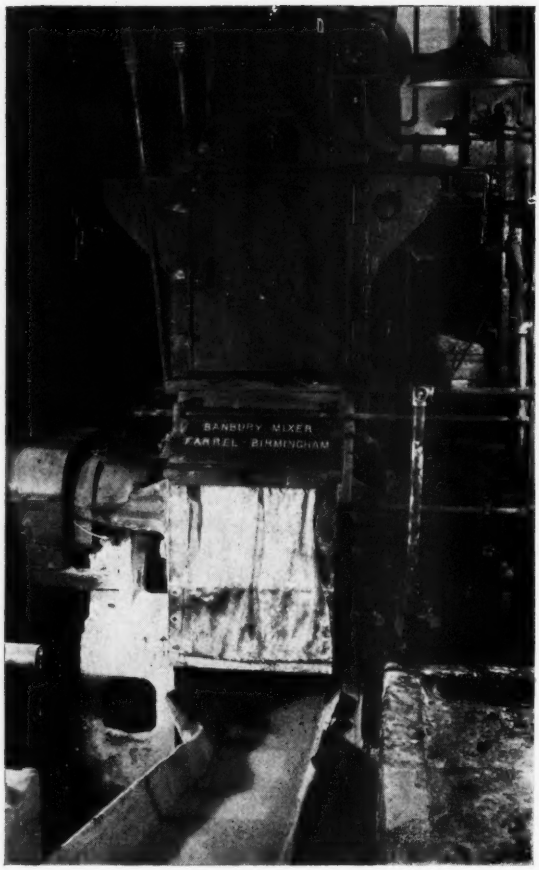
(Turn to page 57)

Hot Rubber on a . . .

STEEL BELT CONVEYOR

By M. J. RILEY
Factory Manager,
The Airlastic Rubber Co., Chicago, Ill.

A novel adaptation of a steel belt conveyor to sponge rubber processing. The installation has met all requirements, with a margin to spare, and has produced worthwhile savings.



Section of steel belt conveyor that receives mixed rubber. Extra handling is avoided.

OUR experience with a steel-belt conveyor in the manufacture of rubber products is generally considered interesting and novel by visitors who come to see our installation, but from our viewpoint the innovation is also a paying one. The dividends it pays are in terms of less handling and greater capacity. It answers all our needs. Our company, by the way, makes sponge rubber products for the automotive, radio and refrigerator industries, and others.

Conveyor carries material over 20 per cent grade through wall opening to mill operation.

Until about a year and a half ago we did our mixing in mills, then purchased a banbury for greater capacity. The new machine had to be installed in a building adjoining the factory (and separated by a wall) because of the size of the banbury and the need for more working area. The floor level of the adjacent building is 6½ feet below the level of the main building.

Under the old method of mill mixing, the individual 150-pound batches were moved approximately 35 feet and the loaded batch pans were then placed (four at a time) on a small elevator for transfer to the higher floor level. Here further handling was required to bring the pans to the slab mill. Since we mixed a batch of every 10 minutes, the services of four men were required to keep the loads moving to the mill room.

This type of cumbersome handling was out of the question with the banbury that would produce the batches at an increase of approximately 50 per cent. But at the time it was impossible for us to wait for delivery of the slat conveyor customarily used in this type of operation. We might have had to wait a maximum of 10 months.

Our inquiries led us to the steel belt conveyor which we have used ever since. While the adaptation of this equipment has been markedly successful, there were nevertheless certain things we had to learn in the beginning. We did know, however, that the adherence of the rubber to the steel would be sufficient to hold the material on the 20-degree grade which the belt travels

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Wherever free-flowing bulk materials are handled, the new B-G 545 pneumatic-tired Bucket Loader is *right*. It's big and fast—loads at a high production pace. It's easy to put to work in just the right spot—turns in its own length, has the power and traction to crowd into the bank and has a high speed reverse for faster travel around the yard. Simple, centralized controls; electric starter; hard-lipped buckets; it's engineered throughout to meet up-to-the-minute demands.

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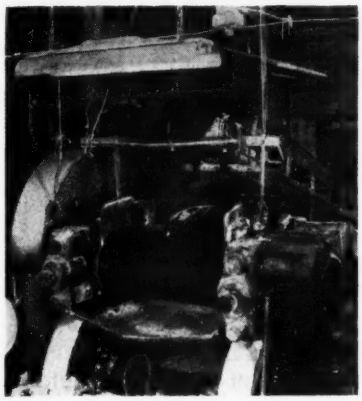
Constant Flow Equipment

BUCKET LOADERS • BELT CONVEYORS • PORTABLE BELT AND FLIGHT CONVEYORS • CAR UNLOADERS • SNOW LOADERS • COAL LOADERS

(through a wall opening) from one building to the other. But we did not anticipate the tendency of the rubber to stick to the sides of the conveyor trough, which is about



This photo shows the end point of the steel belt conveyor, centered over the mill rolls.

eight inches high. The result was that the particles that hardened on the sides dragged against the batch moving on the belt.

We figured that this handicap could probably be overcome by running the 55-foot conveyor at a certain speed. We made a number of experiments with the aid of an engineer furnished by the manufacturer, until we had increased the speed from approximately 20 feet a minute to about 45 feet a minute. The result at this rate of travel was gratifying. We found that as the batch dropped out of the banbury hopper on the moving line, the conveyor speed had a tendency to stretch out the rubber over a length of 10 feet. The effect of this stretching was of course that very little rubber came in contact with the trough.

We also learned something about proper maintenance care of the equipment. The conveyor, we found, had to be cleaned once a week in order to keep it running smoothly; otherwise rubber particles would clog up the moving parts. But we don't consider this a drawback. Actually, it is an advantage, because the regular cleaning helps preserve the machine and keeps it in good running condition. For cleaning purposes, we use a standard rubber solvent and wire brushes.

As the photos on these pages show, the short length of the conveyor line directly under the banbury hopper is level. Beyond this point, the line travels up a 20-degree grade to deliver the material to the mill room on the higher floor level. The end point of the line is centered over the mill rolls, thus discharging the material without intermediate handling to the next processing operation.

The width of the steel belt is 18", and the line is driven by a ⅓ h. p. motor. While the present conveyor handles a 50 per cent greater volume than we produced formerly, its capacity has not even been approached. And considering the savings in time and effort and the straight-line flow it has given us, we feel that the installation has more than met our expectations and requirements.

OPPORTUNITY

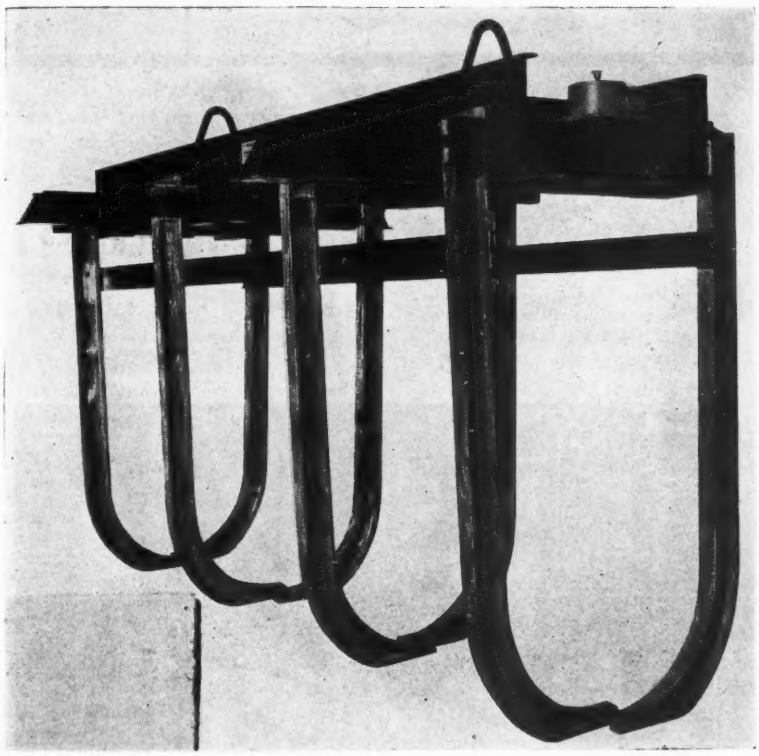
Prominent motive power battery manufacturer is now establishing sales agencies in mid-western cities. We invite inquiries for this lucrative proposition from sales engineers, material handling men, manufacturers' agents or others in a position to give good representation.

CONTEST OPEN TO YOU

You may enter a winning paper in the FLOW contest on reducing material handling costs. A total of $1,500 will be awarded in prize money. Read the announcement on page 62, then write in for your entry blank.

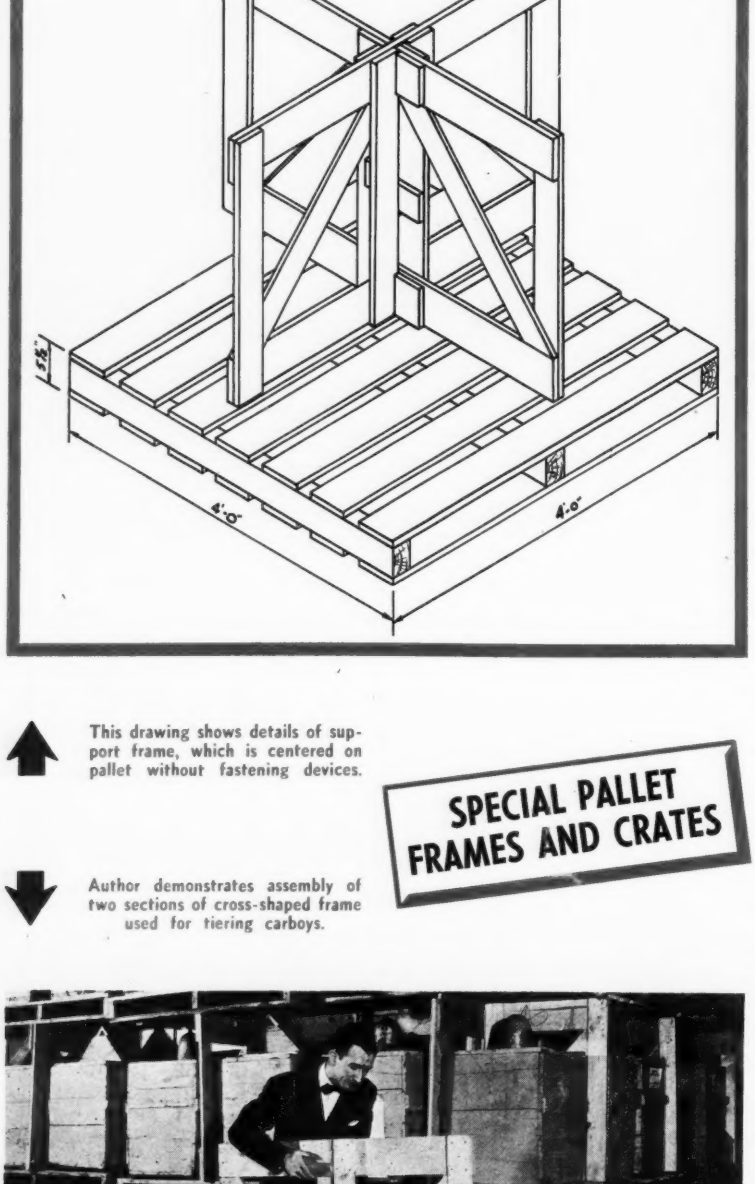
GRAB WITH CURVED LEGS

THIS is a motor-driven grab with legs so curved that they will go under a bundle of bar stock. The equipment is used for handling this stock chiefly in production. During processing, the bars from the various machines fall into a fixed cradle which is shaped approximately like the grab legs shown here.



For lifting, the legs are moved out in a horizontal line. In this position the grab is lowered over the bundle and the legs brought in under the stationary rack. In this way the bundle is lifted free of the rack without the necessity for other handling equipment. The bundle is then deposited further along the line by reversing the procedure just described.

With this type of grab, material can also be brought from storage and placed in the stands alongside automatic screw machines. This method facilitates the feeding of such machines, particularly where the volume is sufficient to warrant the handling of one size rod for a reasonable period. Grabs of this type are in operation with capacities ranging from 2,000 to 15,000 pounds per lift.— **Courtesy Mansaver Industries, Inc., New Haven, Conn.**



This drawing shows details of support frame, which is centered on pallet without fastening devices.

Author demonstrates assembly of two sections of cross-shaped frame used for tiering carboys.

SPECIAL PALLET FRAMES AND CRATES

A Method f
CARBOYS O

Carboys of acid represent no handling or storage problem at the plant of this manufacturing chemist. There's an equally simple and effective method for odd-shaped bundles of packaging materials. You may be able to adapt one or the other of these ideas.

By ROBERT BRADY
Planning Dept.,
Helene Curtis Industries, Inc., Chicago

USUALLY it's a few odd-shaped items in a plant that resist easy and quick disposal when a handling system is being successfully engineered for the bulk of standard materials. Carboys of acid and special packaging materials are frequently in this group of exceptions. The methods devised for both by Helene Curtis Industries, Inc., Chicago, may suggest a solution for plants with similar problems.

Carboys Are Tiered Upright

Of the more than 50 kinds of bottles received by Helene Curtis Industries, Inc., world's largest manufacturer of products for beauty shops, the handling of carboys of acid represented one of the hardest problems. The plant had successfully palletized a large variety of materials, but this could not be done without giving special consideration to the irregularly shaped carboys. As is well known, the neck covers do not readily permit stacking. It was realized that some companies solve the problem by laying the carboys on their sides, using the flat surfaces of the protective boxes for stacking purposes. However, the company did not want to adopt this practice.

d for TIERING
S OF ACID

Fork truck tiering pallet loads of carboys to rafters. Economies also apply to empties.

Sometimes the corks loosen, causing leaks. And since some of the acids used by Helene Curtis come as high as $300.00 a carboy, no chance could be taken with leaks which might be injurious to the health of the personnel and cause damage to stored products.

The company's Planning Division (responsible for all material handling) made a study of the problem, and several ideas were developed as possible solutions. These were reviewed and the less likely ones were eliminated. The unanimous choice was in favor of a slotted, two-part pallet frame whose construction details are shown in an accompanying drawing. This frame has effectively met all requirements for handling pallet loads of carboys to and from storage.

The two-part frame is made from 1" lumber, and the outside dimensions are 48" long and 34" high. Each of the two frame sections has a 1" slot in the center, as shown in the drawing, by means of which the two parts are joined into a cross-shaped assembly. When the two slotted frames are thus assembled, they are supported by the cleats or blocks, holding them together in a rigid structure. The assembly is simply centered on 48" x 48" double-face hardwood pallets which are standard with the company.

The carboy pallet with its frame is positioned alongside the freight car, from which the individual carboys are removed on two-wheel hand trucks. The loaded pallets, four carboys to each, are then picked up by fork truck and stacked three high in the storage area. As can be seen from one of the photos, this is close to the rafters.

Since the frames are 36" high, the loads rest on them and not on the carboys, and since this height exceeds that of the neck of the carboys, the latter can be removed individually from the stacks (when necessary), leaving the rest of the stack intact.

Thus the pallet frame for carboys has solved several problems with complete success. 1. Since the carboys are tiered close to the rafters, cubage is effectively used in storing these difficult-to-handle items. 2. Since the company may have as many as 300 carboys in storage at one time, a considerable amount of square footage has been saved for other purposes. 3. Because the carboys are not placed on their sides, the danger of leakage and damage to other goods is avoided. 4. The simplicity of the load-supporting frames is another advantage. The frame on the bottom pallet supports a load of approximately 1,800 pounds when the material is stacked three high. 5. When the frame is not assembled, the individual flat sections are stacked neatly, using a minimum of space and at the same time leaving the standard pallets free to be used for other materials.

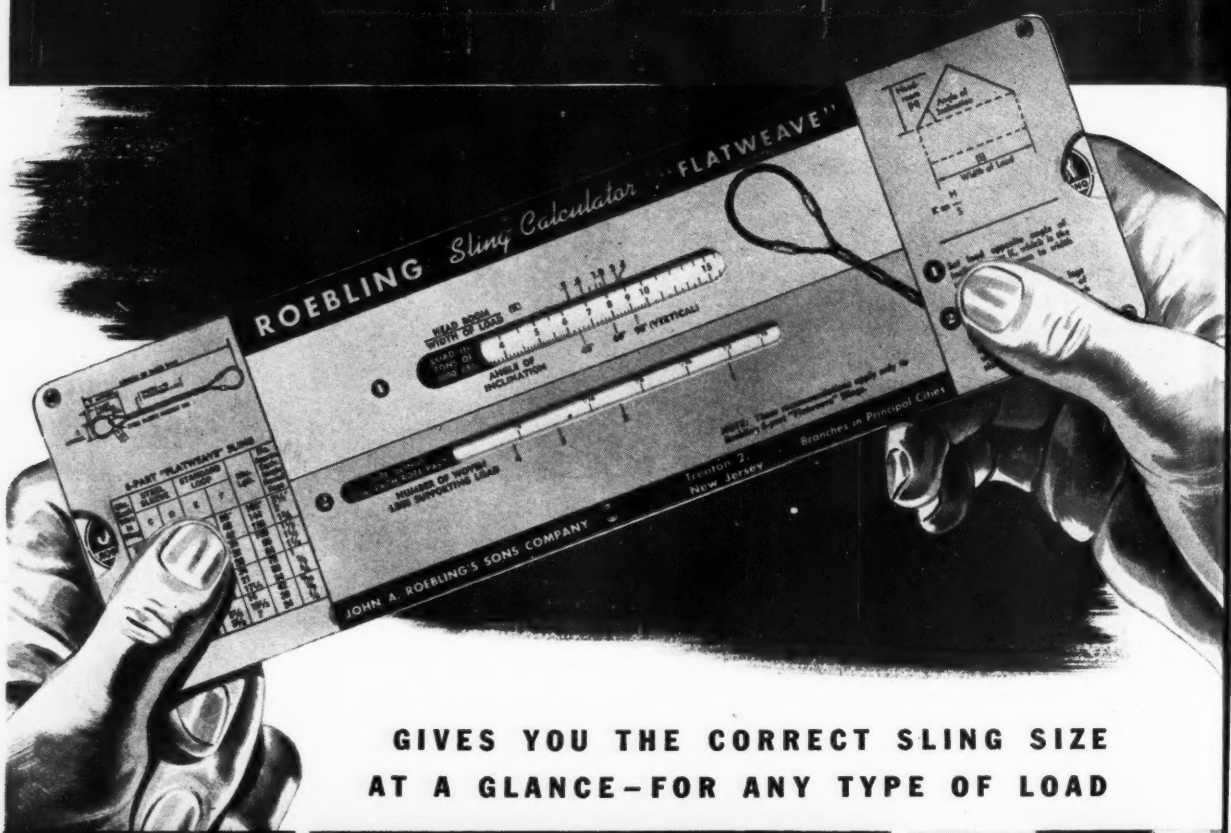
Drop-Side Pallet Boxes

The company's solution of a packaging material handling problem likewise has application to many plants. A slat-type pallet box, attached to the regular 48" x 48" pallet, is used for irregularly shaped bundles of printed cartons, chip board boxes and packages of paper sleeves for boxes, and similar items that do not stack easily. The dimensions of this unit are 48" x 48" x 48".

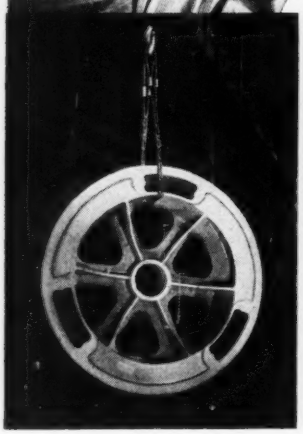
Originally the four sides of these load carriers were solid, which did not permit access to the material in the bottom box when these units were tiered. To overcome this handicap, the Planning Department redesigned the same pallet boxes by hinging one side, as shown in the accompanying drawing. The drop side is approximately ½" lower than the three other sides, thus permitting the gate to be dropped even though another load is tiered on top. This bin type pallet affords several features:

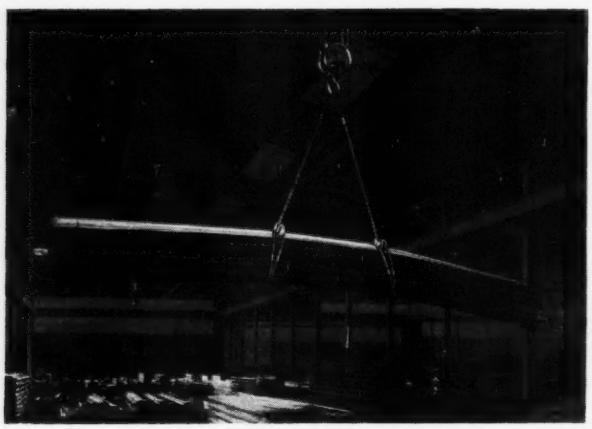
1. The drop gate is a convenience when it is necessary to withdraw small quantities of packaging material from the tiered containers. 2. A record card on the bin makes inventory control an easy job. 3.

SLING FACTS AT



GIVES YOU THE CORRECT SLING SIZE AT A GLANCE—FOR ANY TYPE OF LOAD





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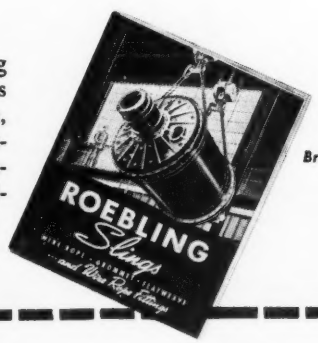

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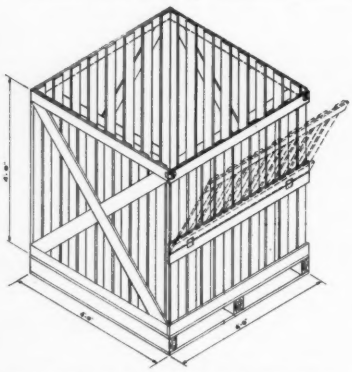
The moving of small bundles and boxes is made simple, when the reshuffling of warehouse space is required. 4. The drop gate is fastened with a self-locked hasp at each side, avoiding the danger of accidental opening while the pallets are in transit. 5. The self-locking hasp is made so it can be padlocked to prevent pilfering of items when the bins are in a tiered position.

How drop-gate facilitates removal of packages from lower crate when unit is in stack.

Unlike the carboy frames which are placed on the pallets without a fastening device, the slatted boxes are nailed to the pallets bases by use of cleats. The uprights are cross-braced.



Drawing shows dimensions and construction features of pallet crate. Article lists several important advantages.

The solutions devised are not spectacular in themselves, but they have made possible remarkable savings and operating improvements at our company.

JULY ISSUE BRIEFS

A report on a metal scrap yard operation describes handling methods in releation to safety and economy factors. By its alertness to the latest handling techniques, this company is enabled to render valuable service to some of its customers . . . . Monorail takes to the air—in the new DC-6 ships, now being put into service by United Air Lines. The use of monorail carriers is an interesting development, which is contributing its part to the maintenance of fast flight schedules through observance of scheduled ground time . . . . A leading manufacturer of automobile replacement parts revamps a multistory warehouse into a one-floor layout, adopts mechanical propulsion for stock trucks and, besides other features, develops production standards for the order picking operation. Result: a 50 per cent reduction in manhours. . . . Assembly of fractional horse power motors—covering material flow through testing, spraying, packing and into outbound carriers. These and other articles will appear in early issues.

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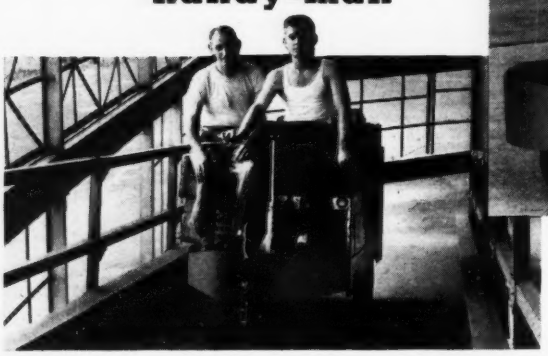

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The sturdy, versatile BUDA Chore Boy is indispensable for hauling tools, supplies, spare parts—loading and unloading freight cars or trucks—in and around factories, warehouses and store rooms. There are scores of material handling jobs in your plant that can be done faster, safer and more economically with a BUDA Chore Boy. Easy to operate, it goes anywhere—up ramps—into confined spaces—over rough surfaces—with loads up to 2000 pounds. Initial cost is low, and operating expense is only a few pennies a day—runs all day on a gallon of gas. Write today for descriptive literature.

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YOU DIDN'T KNOW THE SHOVEL HAD BEEN INVENTED

And you had to dig with your hands

You'd feel awfully silly, wouldn't you?

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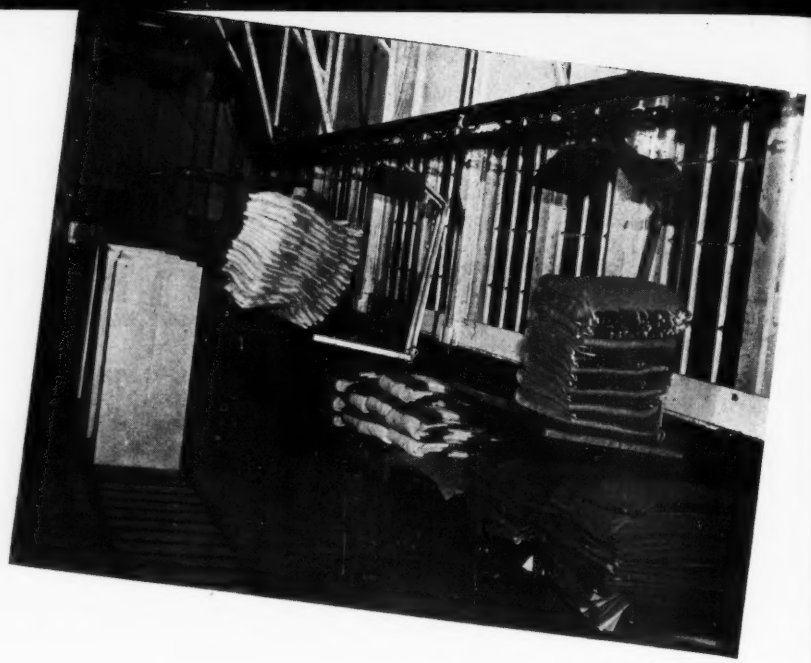


Blankets from production are placed in semi-seal cartons, spotted on roller conveyor, shown at the left of photo.

this multi-story blanket warehousing, packing and shipping operation was designed for . . .

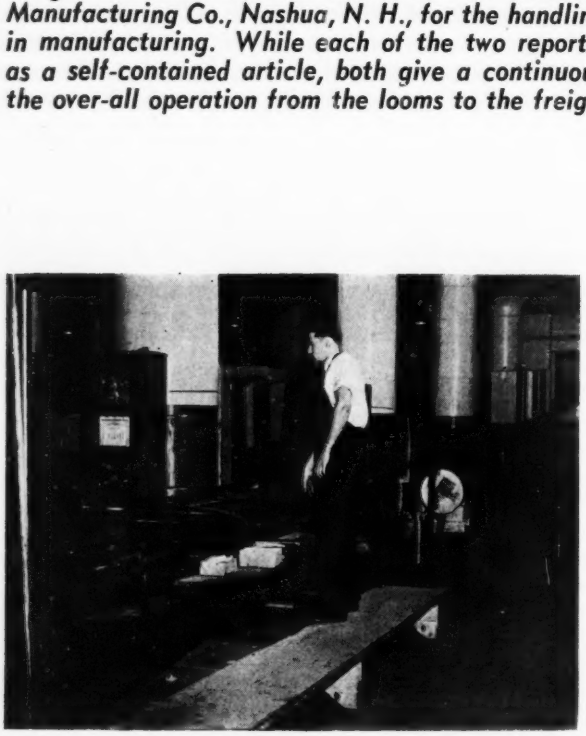
SMOOTH FLOW · · NO LIFTING · · FAST LOADING

Nashua blankets by the carlots move through assorting, packing, sealing and storage over a noteworthy flow system, and the pallet method in shipping has contributed important handling economies.—See also last month's article on the Nashua Manufacturing Co., Nashua, N. H., for the handling of blankets in manufacturing. While each of the two reports was written as a self-contained article, both give a continuous account of the over-all operation from the looms to the freight cars.

CHAIN, GRAVITY AND POWERED CONVEYORS, HAND TRUCKS, CHUTES, FORK TRUCKS, STEEL STRAPPING

THE blanket warehouse is located to the south of the building containing the blanket finishing department, and the two buildings are connected at the second-story level by a covered trestle 64 feet long. The finished and inspected blankets, both boxed and unboxed, travel across this bridge on 2′ 3″ x 3′ 4″ tray carriers suspended at 12-foot centers from an overhead chain-type conveyor.

The line dips to working level on entering the warehouse. The boxed blankets are taken off the trays from the section traveling in a north-to-south direction and are placed in nearby racks according to colors and grades. An attempt is made to apply all boxed blankets



Semi-seal cases are stopped by belt (background). Line is actuated by switch, controlling flow to sealer.

directly to orders at this point, which eliminates semi-seal and re-handling operations later.

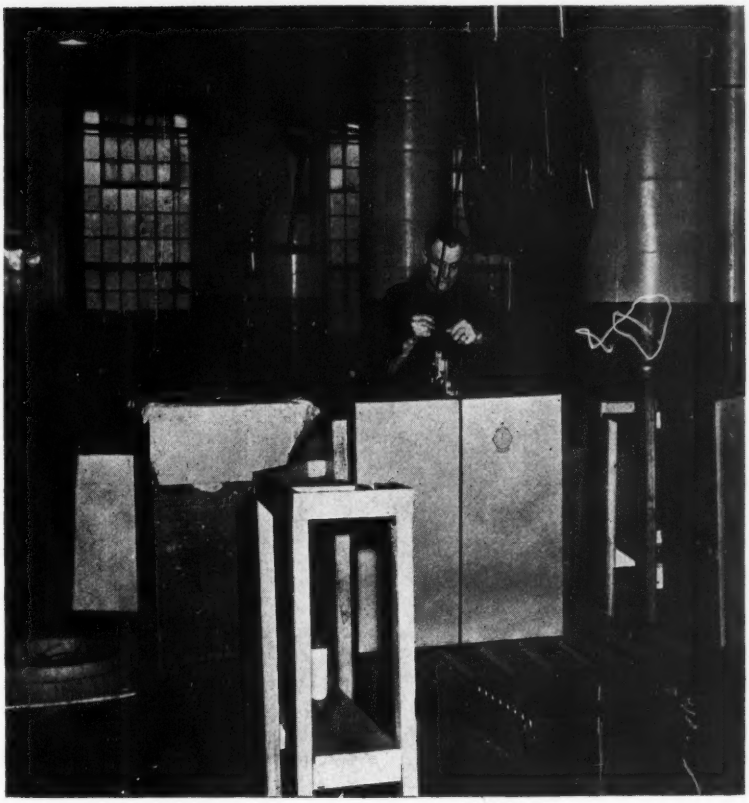
If unboxed, the stacks of blankets travel along the south wall in an easterly direction. Here they are taken off the trays (see photos) and placed in corrugated shipping containers (in solid packs) according to grades and colors. Most of these cartons, incidentally, measure about 31 inches long, 19 inches wide and 35 inches high, and are spotted on a roller conveyor at floor level. (Immediately beyond this unloading point, the overhead chain conveyor inclines close to the ceiling and, after circling the area, returns via the connecting bridge to the blanket room in the adjoining building.)

The full cartons are pushed approximately 15 feet on the roller bed to an inclined powered belt about 40 feet long, which delivers them to the semi-sealing machine in the adjoining packing room. A diagrammatic sketch of this area is shown on these pages.

The incoming line from production just mentioned is indicated by "A" in the flow chart. From the overhead conveyor in the adjoining room the arriving cartons travel down a slanting section of gravity rollers, and are stopped by a 15-foot belt line. The belt is controlled by the sealing machine operator and is approximately 40 feet back of the machine. The sealer operator actuates the powered belt by means of a switch, thus regulating the flow to the sealing machine according to need. A tilting section at the feed end to the machine is synchronized with the latter, serving as a stop and feeding the cartons one by one into the sealer (when several containers are lined up at this point).

In this sealing operation, incidentally, only the bottoms of the cartons are sealed—hence the use of the term "semi-seal." Just beyond the machine, the upper flaps of the containers are lightly taped to hold them flat. The semi-sealed cartons then travel over a U-section of roller conveyor, the first leg of the trip to temporary storage.

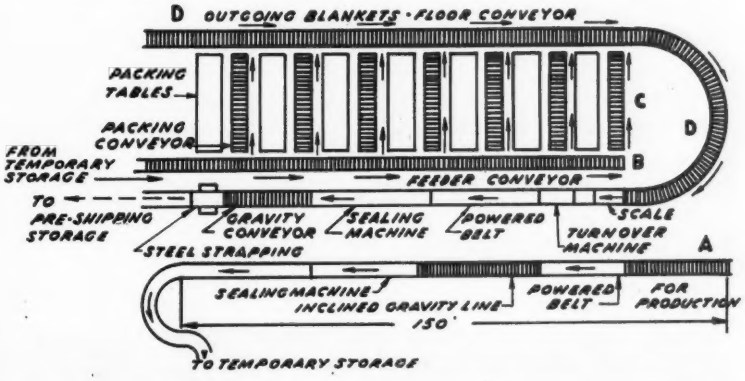
But, first, a word about the semi-sealing operation. The purpose of sealing the cartons on the underside is to prepare them for shipping and for temporary storage before their contents are applied to orders. By sealing one side *ahead of time*, this part of the work does not have to be done later. Moreover, if the bottoms were not sealed, it would be difficult to handle the containers when they are being prepared for shipping.

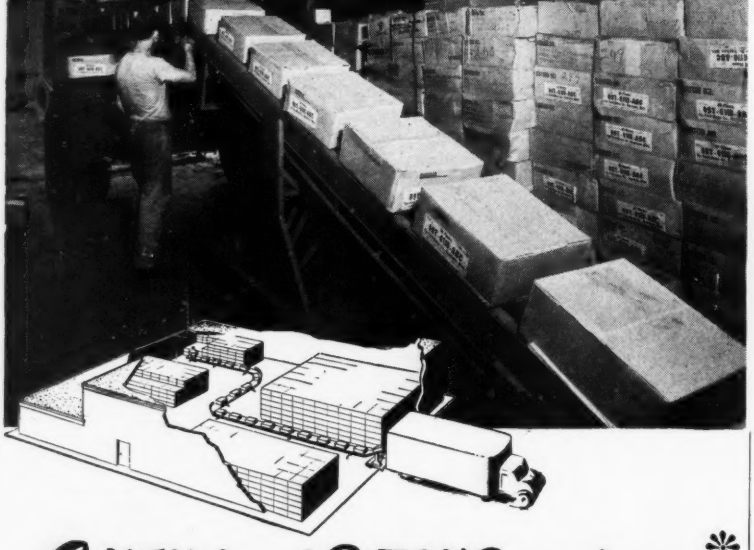


Sealed cartons, on way to pre-ship storage, are steel-strapped on roller platforms for safety.

From the U-section just mentioned, the cases feed to a powered belt line which moves the units overhead through a wall opening and delivers them (above the west side of the shipping room) to a vertical lift. The latter is an endless chain conveyor with carriers spaced at approximately 10-foot centers. This vertical conveyor serves the eight storage floors of the warehouse building. The arriving (and

Flow diagram of sealing and packing floor. "A" line is from production. Goods return on "B" for packing. "C" indicates packing conveyors. "D" is line for completed cases.





2 MEN load 9 TONS per hour*

*IN ONE YEAR THIS EQUALS 43,200,000 Pounds or 2 Heavy Cruisers

THE PROBLEM

Baker Cartage Company of Detroit hauls cartons of pistons for the Ford Motor Company. Cartons weigh approximately 50 pounds each and are stored in a large warehouse that does not have a loading dock. Cartons must be moved as much as 200 feet and then lifted into a truck.

SOLVED BY RAPIDS-STANDARD

Rapids-Standard engineers suggested Rapid-Wheel Gravity Conveyors with Q-Stands for carrying the cartons through the warehouse and a Rapid Power Booster for lifting them into the truck. The installation has been an outstanding success. Two men, one feeding the conveyor and one stacking inside the truck, handle an 800 carton load weighing 21 tons in 2⅓ hours. The complete operation can be handled by the driver and his helper.

The same set-up is used for unloading trucks. The direction of the Power Booster and the slope of the gravity conveyor are simply reversed.

The installation can also be operated with just one man. The conveyor is set up in the usual way and the man feeds the gravity conveyor until it is loaded with cartons for its full length. Then he climbs into the trucks, turns on the Rapid Power Booster and cartons are fed to him until the line is empty.

Rapids-Standard Portable Conveyors have a time and money saving place in the handling of cartons, bags, cases, bales, cans or packages. Write today for full information on how they will save for you.

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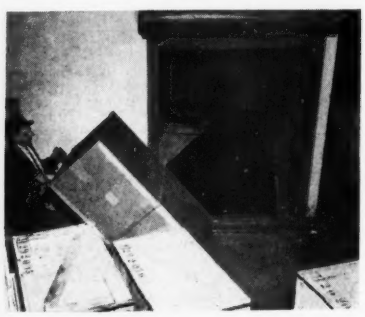
The Rapids-Standard Co., Inc.

Sales Division — 377 Peoples National Bank Bldg., Grand Rapids 2, Michigan

descending) cartons are removed at any desired floor level by extending into the shaft take-off arms which are off-center to the members of the carriers. From the roller-equipped take-off arms the cartons are routed over inclined



Strapped carton of blankets is moved by two-wheel truck to chute which delivers to . . . (next photo on opposite page)

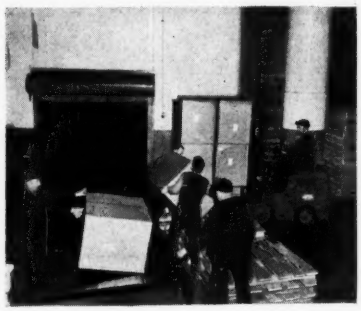
sections of gravity conveyor within convenient handling distance of the "semi-seal" stockpiles.

When the goods stored in the semi-sealed cartons are to be packed for shipping, the designated containers are returned from the stockpiles via gravity roller lines feeding to the "delivery" side of the vertical conveyor. On the first floor (this time above the east side of the shipping room) the cartons arrive on an overhead gravity line which terminates at line "B" on the accompanying flow chart—the packing department proper. "B" is a floor-level line of roller conveyor which extends the full length of a series of blanket packing tables ("C") positioned at right angles to this feeder line.

The cartons are positioned alongside the tables and the blankets are then assorted on the tables according to the colors and patterns ordered. When emptied, the semi-sealed containers are placed on the shorter transverse roller lines one of which parallels each packing table. After ticketing, the blankets are returned to the original cartons in the proportions ordered. In other words, the solid pack has now been broken up.

The full shipping containers are then advanced on the short transverse conveyors to "D," the outgoing line that forms a huge "U" around the entire packing section. The flow over the straight-line and transverse lines can be conveniently followed in the accompanying

diagram. After the containers pass the 180-degree turn, they move onto a scale platform, and from here to the turnover machine which turns the cartons for the final sealing operation. The sealing machine on this line is fed by a powered



. . . . shipping floor. Here cartons are palletized for fast loading of cars. See article.

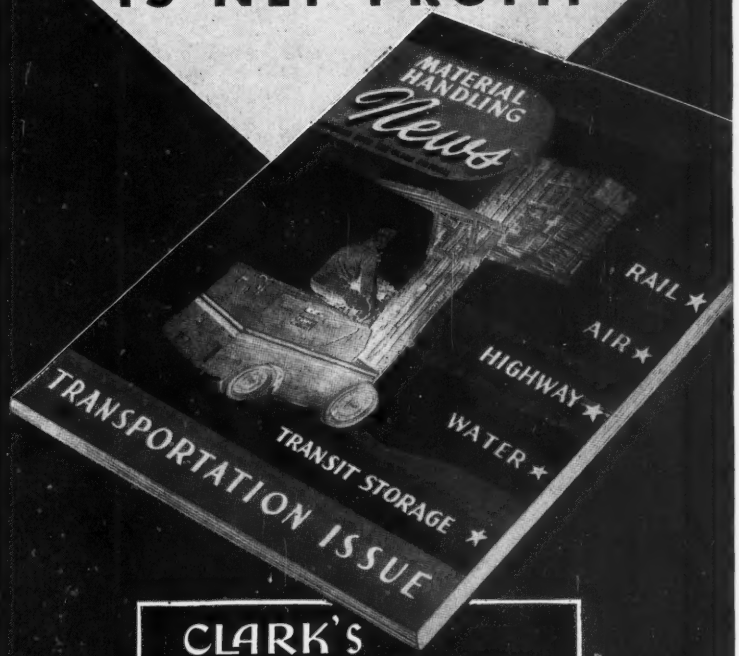
belt located about 35 feet beyond the turnover machine. The cartons are sealed in the same manner as in semi-sealing on the parallel incoming line from production. In the interest of a neat and clean package, a strip of tape is applied across the center of the cartons, top and bottom, as they emerge from the sealing machine.

Approximately 25 feet beyond this station is the end point of the packing conveyor system illustrated in the sketch. In order to make the cartons tamper-proof, they are here rolled on positioning platforms (one to each side of the conveyor) for strapping purposes. A band of ⅜" steel strapping is applied from suspended reels, and the strapped cartons then move over a 90-degree turn to a powered overhead branch line that feeds to the vertical conveyor mentioned previously. The cases are now transferred for "permanent" storage to the several warehouse floors in the manner described previously in connection with the semi-sealed cartons. (Semi-sealed and permanent storage piles are maintained in separate areas.)

An explanatory word will be in place about the method that "prepares for shipping" and then "returns to storage" after packing. The reason is that the blanket business is a seasonal one. Customers place their orders months ahead of the actual delivery date. When the orders are received, the proper assortment of colors and

(Turn to page 48)

IF YOUR TARGET IS NET PROFIT



CLARK'S MODERN METHODS AND MACHINES AS PRESENTED IN THIS NEW ISSUE OF "MATERIAL HANDLING NEWS" WILL HELP YOU TO ACHIEVE YOUR AIM

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Division of CLARK EQUIPMENT COMPANY
BATTLE CREEK, MICHIGAN
OTHER PLANTS – BUCHANAN, JACKSON, BERRIEN SPRINGS, MICHIGAN
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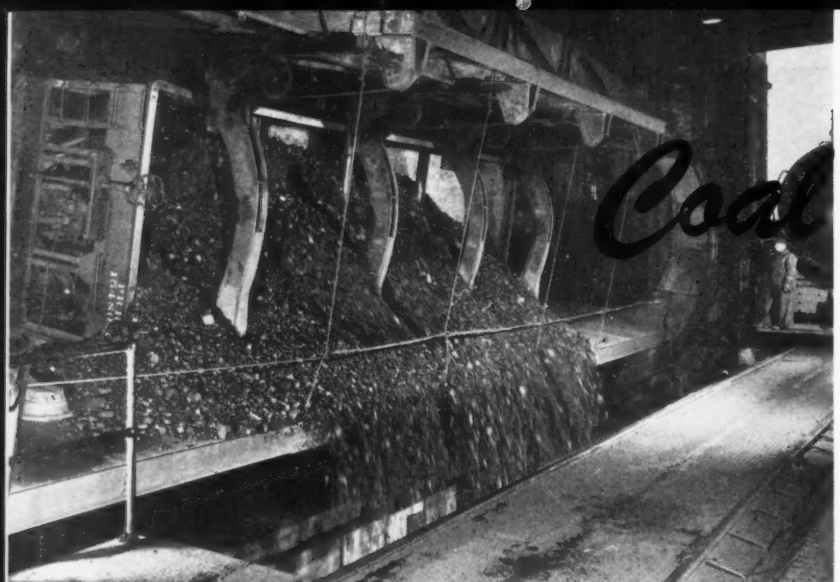
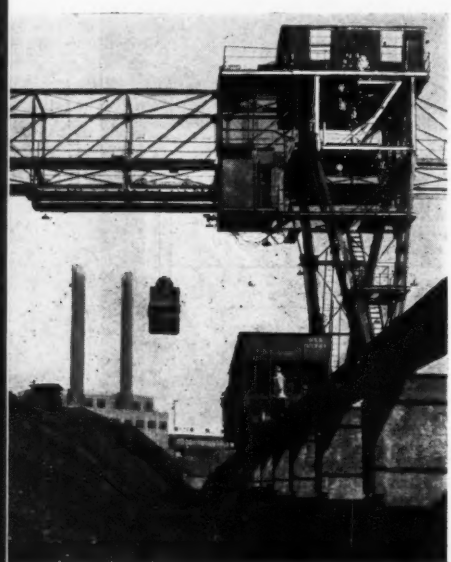


FOR THE LI

One of the three power plants of this consumes daily as high as 360 tons, at least once before the coal can be us operating every day of the year. Deliver ers feeding 32 stokers and six pulve develop a 344,000 kilowatt output. T improvements are

CONVEYORS CRANES

THE Lake Shore Power Plant (one of three in Northeastern Ohio owned by the Cleveland Electric Illuminating Company) furnishes power to industry and homes in Cleveland and in surrounding communities. Generating capacity of this plant is 344,000 kilowatts. Coal is delivered by railroad from a main track which runs south of the company's 25-acre plant site. The cars are switched by three company-owned steam locomotives to 11 spurs in the siding which contain more than 14,000 feet of track. Frequently as many as 80 cars a day are delivered to the plant; approximately 20 of these are diverted to storage.



Left: Pit track, gantry with 2½-yard bucket and bulldozer. They serve main stock pile.

Rotary car dumper empties 50 to 70 ton loads at a rate of 12 cars per hour.

The storage area holds approximately 102,000 tons of coal. The main storage area, adjacent to the rotary car dumper house, holds 55,000 tons. A pit track extending the length of the 300′-long storage area is used to unload the hopper-bottom coal cars. A gantry crane with a 2½-yard bucket, spanning both the pit track and the 100′-wide storage pile, is employed to build the stockpile, while a bulldozer spreads the coal to minimize spontaneous combustion and to permit maximum utilization of the storage space. An extension of this area is also served by spurs. Two steam cranes with 1½-yard buckets and a gasoline crawler-type yard crane equipped with a ¾-yard bucket move the coal from spur to storage. Fuel is used from these storage areas by loading cars with the crane equipment. The cars are then emptied by the rotary car dumper which feeds the bulk handling system.

Rotary Car Dumper

The rotary car dumper is located in a building about 80′ long by 50′ wide. The loaded cars are moved into the dumper by means of a yard locomotive. After a loaded car is spotted for dumping, four clamps are lowered from the "U"-shaped sides, locking the car securely to the track. The car's weight is recorded in the scale room, and then the rotary dumper is turned 180° on its axis to discharge the 50 to 70-ton load into the 270-ton capacity dump hopper below. It takes less than a minute to empty a car in this manner, and only five minutes for the entire operation. (A seasonal diffi-

E LIGHTS OF CLEVELAND

plants of this leading utility company as 360 tons, which must be processed coal can be used. The handling system he year delivers the green coal to bunk- and six pulverized fuel-fired units to att output. Three important operating rovements are listed.

culty encountered is the freezing of carloads of coal. Yard employees, equipped with oil-burning heating units, must occasionally thaw them out before they can be unloaded.)

Prior to the installation of the rotary car dumper, the coal was gravity fed to the conveyor system from the cars by conventional drop-bottom hopper unloading. This method, with the assistance of a six-man labor gang armed with bars and shovels, required more than 20 minutes to unload a car. Parallel trackage across the dump hopper permitted the unloading of two cars at a time, but required two crews of helpers in addition to the trainmen. Installation of the rotary car dumper reduced emptying time from more than 20 minutes to five minutes.

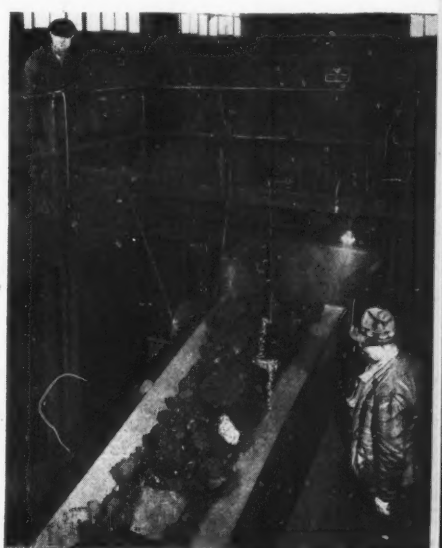
The dump hopper fed by the rotary car dumper is approximately 60′ long by 26′ wide. Steel grids, extending crosswise, are located on 18″ centers approximately 15′ below the dumping point. Large frozen pieces and lumps falling from the cars are broken on the grids, thus eliminating obstructions in the shakers. The coal passes through twin collecting hoppers to double reciprocating feeders. The feeders (one at each hopper) agitate the coal to maintain a free flow.

The "Y"-shaped inclined tables from the feeders converge at a central chute which discharges the coal onto an endless belt conveyor below. Here the coal moves in a concrete tunnel some 35 feet below track level. From this point, it is moved 200′ through the tunnel back to track level at the breaker house for processing on a 40″-wide belt, supported on troughing-type idlers on the carrying run at a rate of 400 tons per hour. It discharges into a Bradford breaker, a perforated steel plate cylinder, which rotates on a slightly inclined axis. The coal is broken by impact when it drops to the bottom of the cylinder from shelves fastened to the interior. The broken coal passes through 1¼″ perforations and is gravity fed by a collecting hopper and chute to a 36″-wide troughed conveyor belt which

Left: Troughed belt 40 inches wide conveys coal 200 feet from dump hopper to breaker (400 tons per hour).

Coal coming from car dumper hopper, here shown being delivered to the breaker.

Discharge point of line at breaker. In bottom left corner is picker belt which returns foreign objects and unbroken coal past picker to discharge back on breaker feeder belt.



moves it across the yard to the seventh story of the "A" building.

Trap rock, slate, tramp iron and unscreened coal is discharged at the end of the cylinder through a chute to a 24″-wide picker belt which carries this material 39′ back to the main floor of the breaker house. A picker stationed at the belt inspects the rejected material as it passes. He picks out foreign material, and the coal remaining on the belt is discharged back onto the breaker feeder belt.

As mentioned previously, the belt from the breaker, which extends to the seventh floor of the "A" plant building, inclines across the yard area for most of its 363′ length. To protect this line from the elements, and to permit access for inspection and maintenance, the unit is enclosed in a shed wide enough for an inspection catwalk. (The tunnels through which the lines move underground are also wide enough to permit regular inspection and servicing.)

At the discharge point of the line entering the "A" plant building, an automatic sampling device takes samples which are sent to the laboratory for inspection. The coal at this point is discharged onto a 36″ troughed belt which travels at right angles to the incoming feeder line. This belt extends 374′ through the "A" plant building, serving as a crossover line to the "B" plant. A traveling tripper (a tracked device, straddling the belt, used to discharge coal to bunkers from the moving belt) on this line is used to feed two 1200-ton bunkers for the pulverized fuel-fired boilers located in this building.

The crossover line continues through a covered bridge at the seventh story level to the "B" plant building where it discharges through a chute to a 65′-long connecting belt traveling at right angles about eight feet below. This 36″ belt links the crossover line to the "B" plant belt conveyor line which travels at right angles to the connecting belt.

The main line in the "B" building, served by the connecting belt, is comprised of three separate 36″ belt conveyors, 88′, 97′ and 115′ long. A magnetic pulley is located at the head of the last unit to deflect stray bits of metal. Five take-off lines, varying in length from 175 to 195 feet, feed the coal bunkers and move at right angles to the 3-section "B" plant conveyor. Coal is discharged to these through diverting hoppers. Thus the coal can be diverted as required to the take-off lines supplying the bunkers.

A take-off line, 195′ long, also equipped with a traveling tripper, serves the bunkers which feed 12 pulverizing mills located on the first floor, each rated at six tons per hour capacity. The pulverized coal which will be used in the powdered fuel-fired boilers is evacuated from the mills by exhaust fans and blown through pipes into "cyclone" collectors located six stories above.

Screw Conveyors Move Pulverized Fuel

The coal trapped in the four "cyclone" collectors can be diverted by means of separator chutes either into storage bunkers located immediately below, or into two en-

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Dolly & Flat Trucks
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Non-Tilting
Platform Trucks

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Specify Mallory Automatic Rectifier Chargers

MALLORY Automatic Rectifier Chargers have been designed in collaboration with the leading storage battery and truck manufacturers to provide optimum charging characteristics, maximum battery life, completely trouble-free operation. Designed to give maximum service life with minimum maintenance cost, Mallory Chargers have no wearing parts except the ventilating fan.

Mallory was first in pioneering and developing these features, which are incorporated in all Mallory Chargers:

Automatic, approved two-rate charge control.
Charges both lead and Edison batteries.
Adaptable to either 115 or 230 volt power lines.

Long trips to the chargers can be eliminated because Mallory Chargers are compact in size, light in weight, simple in installation. They can be located anywhere close to your trucking activity; just plug them into the nearest outlet and start charging. Should your working center change, pick them up and move to your new location.

Three Mallory Charger models are available, usually from stock, for charging any motorized lift truck battery: eight hours for lead batteries and seven hours for Edison batteries. (See chart.) Other models are available for charging standard truck batteries. All chargers are competitively priced. No "accessories" or "extras" are required.

REMEMBER—the success of your material handling system depends on reliable battery chargers. Why not select your chargers as carefully as you do your trucks and batteries? Specify Mallory Automatic Rectifier Chargers, now available from your motorized lift truck agent through

Automatic Transportation Co.
Barrett-Cravens Co.
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Magnesium Copper Sulphide Rectifier

Most rugged, dependable rectifier for low-voltage, high-current applications.

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Precision temperature-compensated voltage relay.

Exclusive, patented inverse temperature compensating feature.

Operates during the rapid rise in the charging voltage characteristic of a lead battery.

Reduces high initial charging rate to low safe finishing rate.

Starts synchronous timer which controls length of time at finishing rate.

Approved by leading lead battery manufacturers.

Mallory Charger Model	Battery Ampere Hour Rating 6 Cell Lead	10 Cell Edison
12TC60-1	150-330	150-263
12TC75-1	340-440	281-338
12TC110-1	442-660	375-450

Based on an approximate charge cycle of eight hours for lead batteries, seven hours for Edison batteries.

Rectifier Charger Pioneers Since 1927

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LOW COST HANDLING

FOR PLANT ECONOMY

SHOP MULES increase efficiency with low cost handling. Whether it is moving "dead" buses for repair service or hauling trailer-trains through plants, SHOP MULES easily handle the job.

Write for bulletins describing models A14V and A3V-U2 illustrated, or, literature on other SHOP MULE models with load carrying platforms, winches, and arc welders.

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SHOP MULE INDUSTRIAL TRACTORS

INTERNATIONAL HARVESTER POWERED

W. F. HEBARD & CO. • 336 W. 37TH ST. • CHICAGO 9, ILL.

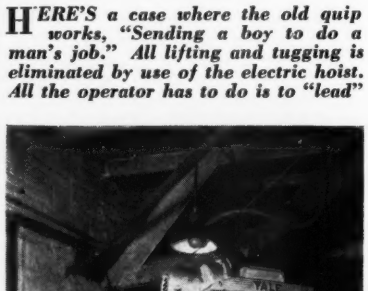
CREATORS AND MANUFACTURERS OF SHOP MULES SINCE 1918

closed 75-foot screw conveyors located in a straight line immediately below the collectors. The 14-inch diameter screw conveyors move the powdered coal to a common chute which feeds the pulverized fuel by gravity into two 83-foot screw conveyors located on the floor below. Each of these moves the coal to four 78-ton bunkers. (Diverting valves installed in the screw conveyors regulate the discharge to the bunkers directly below.)

Slack coal is fed by gravity from

Hoist in Block and Crank Shaft Assembly

HERE'S a case where the old quip works, "Sending a boy to do a man's job." All lifting and tugging is eliminated by use of the electric hoist. All the operator has to do is to "lead"



the costly cylinder block to the desired location. The I-beam rail is diagonal to the building rafters, and the hoist may be utilized in manipulating both the crank cases stored on wall hooks, and the crank shafts themselves (right), in addition to the cylinder blocks.

Another feature of this installation is hook-on-ability. Note the special grab designed to grip the cylinder block at a safe, balanced point—to protect the precision machined surfaces, and offer a husky eye to the hoist hook. Note, further, the rings taped to the electric cable and strung on an overhead wire to keep the cable clear of interference.

***This installation shows what can be done with proper forethough and adequate handling equipment—even when space is limited and parts are heavy and diversified. If your business involves garages, boat maintenance, repair shops, machine shops, heavy machine assembly, and such, this type of hoist handling will pay.*—Photo, Courtesy The Yale & Towne Manufacturing Co., Philadelphia Division.**

overhead bunkers through non-segregating spreaders onto chain grates in the 32 stoker-fired boilers in the "B" building. Ashes from these units drop from the rear of the stokers into receiving pits, from which point they are hauled by car and skip hoist to railroad cars in the yard. In the case of the four pulverized fuel-fired units in the "B" plant, powdered coal from the storage bunkers is fed by screw feeders onto an air stream which carries the coal into the furnace. Ash and slag in solid form are removed from the bottom of the furnaces and delivered by a steam jet conveyor to cars in the yard.

The two pulverized fuel-fired boilers in the "A" building are fed directly from the pulverizing mills. The green coal is fed from the two bunkers through pipes leading to automatic scales which weigh the coal in 400-pound units. From the scales the coal drops to the pulverizing mills. The powdered fuel is drawn from the mills and mixed with air by a direct connected exhauster fan which blows the mixture into the burner pipes. Ash is removed from these boilers at a water-filled slag chamber and in the molten state at the dust chamber. All ash can be sent from these units to a sump in the basement from which it is pumped to a pond just outside of the plant.

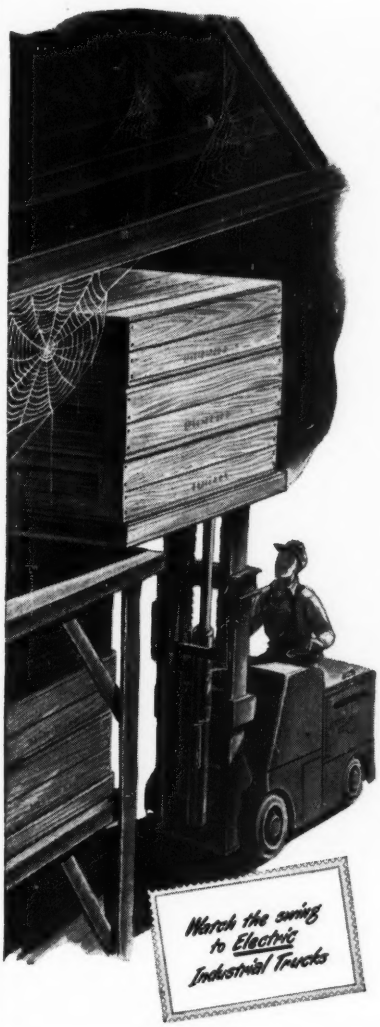
While the system is operating seven days per week, the company keeps the belt conveyor system functioning with a minimum of breakdown through rigid inspection schedules. Weekly inspections of the electric motors driving the conveyors are standard procedure. Idlers and mechanical equipment are inspected daily. The major maintenance attention is required by the steel plate chutes on the traveling trippers which divert the coal.

The benefits of this carefully engineered system are: 1. Reduction of car unloading time 60 per cent. 2. Elimination of physical hazards of manually emptying hopper-bottom cars. 3. Continuous supply of fuel to the bunkers with a minimum of maintenance problems.

YOU MAY WIN

$1,500 in prize money is offered in the FLOW contest on cost reduction. See the announcement on page 62.

EVICTION NOTICE TO *Spiders*



WHEN Crescent's electric PALLETIER moves into your warehouse, spiders move out. Way up where the cobwebs begin, that's where you'll find those extra square feet of storage space you've been looking for. And it's all free! You'll be stacking loads (mounted on pallets) high above the floor—neatly, easily, accurately, safely.

Low in initial cost, the PALLETIER quickly pays for itself by permitting you to utilize more of your present space . . . saves manpower . . . reduces terminal time for loading and unloading railroad cars, highway trucks and planes.

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PALLETIER ADVANTAGES

- Operator spots and tiers without stirring from seat.
- All control levers at driver's fingertips.
- Full magnetic control protects against forced acceleration.
- Inspections and adjustments simplified by easy accessibility to all mechanisms.
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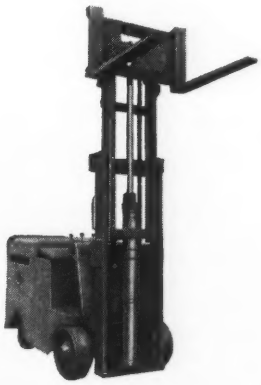
This is the truck to take loads off your mind.



ELECTRIC Crescent PALLETIER

a supply warehouse . .

City distribution section. Shelving over 50" belt conveyor holds small, fast-moving items. Steel bins contain larger and slower moving items. Selections are loaded in split-top cartons which move on the conveyor.

DESIGNED FOR 25% GREATER EFFICIENCY

This warehousing modernization project was designed as a model for Western Electric's numerous distributing houses. The advantages of the new arrangement were demonstrated to visiting men responsible for warehousing operations. Result: They returned to their plants with up-to-date, money-saving ideas.

PALLETS, FORK TRUCKS BELT CONVEYORS, SHELVING

WAREHOUSING is a big business with the Western Electric Company, supply unit of the Bell System. In some of the company's 29 warehouses over 8,000 different items are stocked. Selections from these items some months run as high as 100,000 pieces. Rather than remodel its extensive and far-flung warehousing operations one-at-a-time, the company studied the Cleveland plant to make necessary equipment and method revisions for maximum efficiency. After the revisions had been completed an eight-day demonstration was arranged before the stores managers and warehouse superintendents of the 29 distributing houses. The executives were shown the space and labor economies which resulted from each handling or warehousing improvement. Demonstrations of specialized handling equipment and modern handling and storing techniques gave the men new ideas which they took home for application to their own warehousing operations.

Pallets, Fork Trucks

Bulk storage is complicated by the fact that many items must be stocked in many sizes and shapes. Pallets and pallet racks offered the best solution. Further efficiency is obtained through the use of movable pallet racks which can be shifted to meet the changing warehousing requirements. Floor space can thus be allocated to meet changing receiving and selection demands. In some instances, pallets are stored on the warehouse floor, but only in those cases where there are three or more pallets of one item.

Both the permanent and movable pallet racks are constructed of channel and angle iron members. The former will support three loaded pallets. The movable racks, similar in construction to the permanent units, will hold one pallet

load within the rack and support a second pallet load on top. Pallet size has been standardized to 42″ by 42″. The pallets are the conventional three-stringer double-face type. The company is experimenting with 40″ by 48″ shipping pallets furnished by one of the larger pallet pools.

For City Distribution Items

Heaviest demand for stock items is for city distribution orders. Stock carried in this section totals roughly 500 to 800 items. Because of the small size of these items and the great demand (72 per cent of the total stock selections in the Cleveland warehouse are for city distribution) assembly of orders has been conveyorized. A 50′-long belt conveyor extends the length of this section. The 24-inch-wide belt carries split-top cartons into which the supplies are placed. Three 50′ rows of shelving are located immediately above the belt conveyor. The stock selectors obtain the majority of items for the orders from these shelves. The conveyor is operated by a dispatcher stationed at the head of the belt where he can look down the line and properly space the cartons for selections on the continuously moving belt.

While the shelving above the line contains all of the small items, five rows of steel bins are located at right angles to the conveyor. These contain the larger, bulky items. The bins are 7½′ high by 18′ wide. The 35″ aisles are wide enough for selectors to work the bins and shelving over the conveyor. Items are stored in the bins according to demand. The fastest moving ones are stored closest to the conveyor, while the slower moving items are stored towards the rear. In keeping with this practice, the stores manager studies summarizations of shipments to determine which items are in greatest demand.

In the few weeks that the installation has been in use, the company has found that stock selection efficiency has greatly increased. An indication of the greater efficiency is that under the present arrangement, the men fill all city distribution orders by three p.m., while previously they were hard

GENERAL

INDUSTRIAL PNEUMATICS

. . . SPEED PRODUCTION

. . . INCREASE PLANT EFFICIENCY

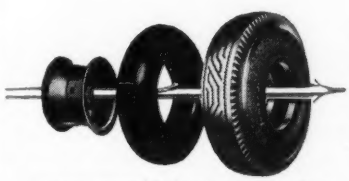
The Buda CHORE BOY—Equipped with General Industrial Pneumatic Tires—Manufactured by the Buda Company, Harvey, Illinois.

MOVE MORE LOADS, FASTER, EASIER, SAFER

In buying or designing new material handling or other mobile equipment—Study these advantages of General Industrial Pneumatic Tires:

General Industrial Pneumatics . . .

Move loads faster and more economically . . . Protect floors and floor coverings . . . Roll easier over soft ground or rough surfaces . . . Protect fragile, easily damaged loads . . . Guard against spillage due to shocks or bumps . . . Roll silently—Eliminate noise . . . Eliminate shock and jar to operator . . . Designed for both high and low speed.



Factory assembled units: Heavy-duty Tire, Separate Tube, Heavy Duty Demountable Wheel and Rim; 8" to 22" o. d. for loads of 180-1900 lbs. per tire.

Wide base rim design, originated by General, has greater load capacity, guards against side-sway, permits low-bed mobile equipment design with low center of gravity that provides stability and straight-tracking in trailer trains. General has the ONLY demountable wheel. Separate heavy gauge inner tubes guarantee maximum air retention.

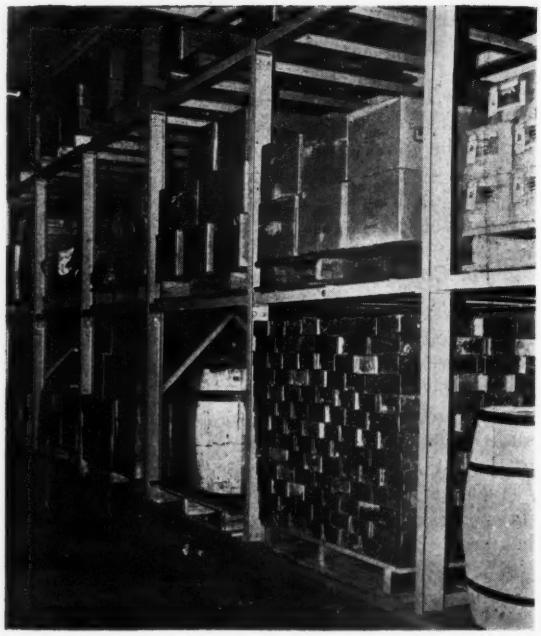
The GENERAL TIRE

THE GENERAL TIRE & RUBBER COMPANY

Dept. 1, Akron, Ohio

INDUSTRIAL PNEUMATIC TIRE • TUBE • WHEEL UNITS

Portable racks increase flexibility of storage as tiering can be done in any section to utilize odd spaces. The angle iron racks, 52½" wide, 24½" deep, by 55" high are moved by fork truck.



Fixed pallet racks made of channel and angle iron members are used for one-of-a-kind pallet loads. Racks, 52" wide, 48" deep, by 8' high, hold two pallet loads, support third on top to utilize area between rack-top and ceiling.

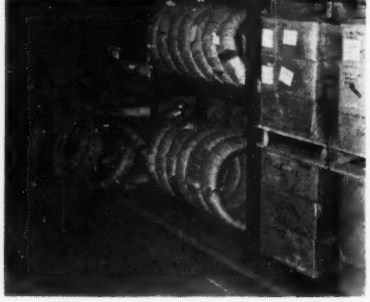
pressed to finish by 5 p.m. The increased efficiency is attributed to the fact that fast moving stock has been concentrated in one small section and selection can be made with less effort.

Palletizing Proves Worth

Company officials state that one of the most obvious economies resulted from palletizing and vertical storage developed in the basement, where room was made for 5,000 square feet of material which formerly had been stored in an outside area because of lack of space, recapturing approximately one-third of the storage area. Some movable pallet racks are used in the basement area along with three-sided storage bins for loose material. These bins are equipped with skid legs and skid retainers to adapt them for double-decking. Some grades of covered wire are received in paper wrapped coils weighing approximately 20 pounds each. These are shipped to the warehouse in glued pallet loads, 32 coils to a pallet. Forty pallets—one car load—contain 1,200,000 feet of wire. The cars are unloaded

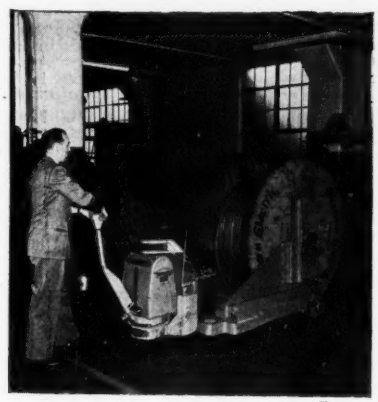
Glued pallet loads of 20-pound copper wire, left. Coils are loaded 32 to a pallet in four stacks. Car load—40 pallets—represents 1,200,000 feet of wire.

Right: Handling and space requirements are reduced and car unloading is speeded with these portable coil racks, which are moved by fork truck into car, loaded, returned to the storage area and tiered. Racks are made of angle iron and are 48½" wide, 19" deep, 35½" high with 4½"-high nesting cradles.



and the material stored by one operator and fork truck in 90 minutes. Typical of some special items which have been successfully palletized are heavy, acid-filled telephone batteries. The batteries are palletized in the original cases, permitting vertical storage.

Heavy coils of bare copper wire previously had been a costly item to handle and store. The coils had to be unloaded from freight cars by two men using manual methods. In the basement the material was unloaded and then stacked by hand. This operation has been mechanized by the development of special angle-iron coil racks which



Powered hand truck designed for reel handling moves two-ton load of lead-sheathed cable. The truck is powered for vertical lift as well as horizontal movement.

can be tiered three high. These are moved and stacked by fork truck, which moves the empty racks into the freight car for loading. The truck returns the loaded racks to the storage area and tiers them, eliminating one handling and saving considerable storage space. Outgoing shipments in many instances can also be handled in load units on racks with mechanical equipment.

Perhaps the heaviest items handled are the large reels of lead-sheathed cable. These weigh as much as two tons each. Special handling equipment has been devised for this material, notably a battery-powered cable transporter which lifts as well as transports electrically.

In assaying the value of the revised methods and equipment, company officials state that a 25 per cent over-all increase in efficiency over previous warehousing methods would be a reasonable estimate. When the Western Electric regional warehousing officials who witnessed the eight-day demonstration take home these ideas for application to their own warehousing problems, and achieve proportionate efficiency increases, the resultant savings will justify many times the cost of the installation.

Photos and data, courtesy Drake, Startzman, Sheahan, Barclay, Inc., Distribution and Materials Handling Consultants, New York.

New Conveyor Belting

A new conveyor belt 250 to 400 per cent stronger than previous rubber-fabric belts has been developed by United States Rubber Company for conveying coal, iron ore and other bulky materials over long distances, according to a recent release.

The key to increased strength is said to be a revolutionary new textile construction of nylon and Ustex yarn that increases the permissible working tension of each ply two and one-half times and permits the use of more plies.

The new belting is especially designed for use in mines, quarries and large dam construction projects. It is estimated that it will save industry many thousands of dollars annually.

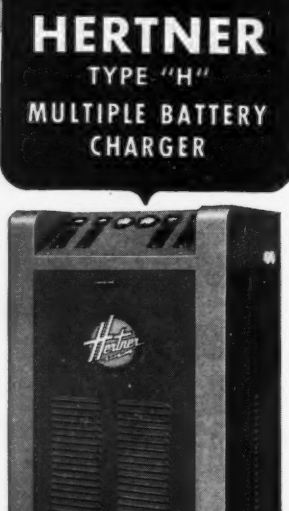
DARNELL CASTERS

Darnell Double Ball-Bearing Casters and E-Z-Roll wheels reduce floor wear to a minimum, lengthen the life of equipment and increase the efficiency of employees—Write for 192 page Darnell Caster and Wheel Manual.

DARNELL CORP LTD. 60 WALKER ST NEW YORK 13 N Y
LONG BEACH 4 CALIFORNIA 36 N CLINTON CHICAGO 6 ILL

Get the benefits of
MOTOR-GENERATOR
BATTERY-CHARGING
for your
MOTORIZED LIFT-TRUCKS

HERTNER
TYPE "H"
MULTIPLE BATTERY
CHARGER



FULLY AUTOMATIC!

The Hertner Type "H" Motor-Generator Charger charges two or more batteries by completely automatic controls without removing the batteries from trucks.

Fully Charge Lead-Acid Batteries in 8 Hours—Nickel-Alkaline Batteries in 7 Hours

Two and four circuit Type "H" chargers are self-contained units with motor-generator sets mounted inside control cabinet. Individual ammeters record charging rate of individual circuits.

Desk top height of instrument panel makes readings of charging rates available at a glance. Screened covers at sides and back provide air circulation for cool operation. Each charger is provided with charging cable—nothing else to buy, since unit is *complete.*

Mail coupon for Bulletin 102 which gives full details of Hertner Type "H" Multiple circuit chargers.

The HERTNER Electric Co.
A General Precision Equipment Corporation Subsidiary
Motors • Motor-Generators • Generator Sets
Cleveland 11, Ohio
Representatives in principal cities

THE HERTNER ELECTRIC COMPANY
12756 Elmwood Ave., Cleveland 11, O.
Send copy of Bulletin 102 to:
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Address_____
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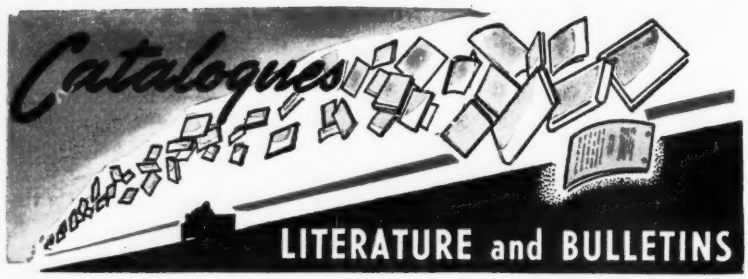


The publications featured on these pages were written by experts. They are FREE publications. To obtain these use the postcard bound into this issue.

325—Skid Lift Truck . . . A bulletin describing the specifications, construction and uses for the Samson Skid Lift Truck has been issued by the General Sales and Engineering Company. The two types of available trucks covered are of 1000 and 2000-pound capacity.

326—Power Unit . . . The Model "Z" Ready-Power Gas Electric Unit is described in a four-page folder by the Ready Power Company. The folder contains technical specifications, dimensional drawing, cut-away view, and describes the features of this means of power for industrial hand lift trucks.

327—Electric Motors . . . Advantages of totally enclosed electric motors and their application to machine tools are described and illustrated in an eight-page bulletin just completed by the Wagner Electric Corporation. Both fan cooled and ventilated types are discussed. Illustrations show applications to drilling machines, lathes, polishing machines and other equipment.

328—Pallets . . . An eight-page catalog describing nine basic types of pallets has just been released by the Acme Pallet Company, Inc. The publication describes and illustrates the use of pallets for storage and shipping of boxes, cartons, bails, drums and similar items.

329—Barrel Handling Equipment . . . A folder by the Morse Manufacturing Company, Inc. shows the use of trucks and related accessories required in the handling of drums, barrels and carboys. Specifications on cradle trucks, hand truck and bottle flippers are given.

330—Battery Charger . . . Description of a single circuit battery charger is contained in a bulletin issued by the Electric Products Company. This charger is fully automatic and is said to operate with a minimum amount of

OPPORTUNITIES

Men wanted Jobs wanted Lines available

FOR SALE

CRANE
For Sale
1 - Link-Belt Speeder Cargo-Crane, Model YC9, serial No. 2Y-454, 10 ton capacity, 20′ boom, powered by Buda gas engine, mounted on 3 solid rubber tired wheels. This machine was brand new last October and has been used very slightly in our own yard and shop.
Price $8950.00
R. B. WING & SON CORP.
384 Broadway Albany 1, N. Y.
Phone 3-4161

FOR SALE: Lewis-Shepard Electric Telescopic Stacker. Capacity 4000 lbs. Lifting Height 6′ 6″. Practically new. Central Fibre Products Co., Hutchinson, Kansas.

REPRESENTATIVES WANTED

To handle complete line of new Lightweight Magnesium Hand Trucks direct to user on liberal commission basis. Complete backing with leads, advertising, sales helps, and protected territory. Write giving lines now handled, territory covered, etc. Box 6247, Flow.

LINES WANTED

Manufacturers' Representative
New York City Area
Seeks Agency for a
Fork Lift Truck
Gas Driven
Have Large Sales Organization, Warehousing Facilities, and Maintenance Department, Box 7146, FLOW.

POSITION WANTED

MATERIAL HANDLING ENGINEER wishes position with manufacturing company. Ability to analyze material handling methods and make cost reduction recommendations. Experience in conveyors, palletizing and power trucks. Box 6147, Flow.

Sales Representative—Office Manager — Executive Secretary — thoro knowledge materials handling, office procedure, mechanical mind, adaptable, alert young woman, proven sales record, highest references. Box 6347, Flow.

maintenance. Typical installations, a dimensional diagram and specifications are included.

331—Stencil Marking . . . The complete line of stencil marking equipment and accessories manufactured by the Marsh Stencil Machine Co., are described in a 40-page, three-color catalog. Illustrated are many uses for stencils, sizes of stencils to use for various shipments, kinds of stencil inks, care and use of stencil cutting machines, and other informative facts.

332—Cleaning Equipment . . . A series of booklets describing the application of airless abrasive blast cleaning equipment to gray iron, steel, malleable and non-ferrous foundries, heat-treat, and forge shops has been published by American Wheelabrator & Equipment Corp. Each booklet deals with a specific type of industry. Case histories, illustrations of products cleaned and sizes and types of equipment are shown.

333—Portable Conveyor . . . A four-page folder by the Flexible Conveyor Co. describes the uses of a flexible, portable conveyor. A joint between each two-foot section turns 22½ degrees. The equipment can be curved to form more than the usual 90-degree turn. It can be operated in an L-turn, S-turn, also a complete circle. The belt is made of aluminum slats, 20 inches wide. Uses for various types of operations are suggested and illustrated.

334—Platform Truck . . . Specifications and features of a light platform utility truck are covered in a brochure by Truck-Man, Inc. The capacity of this pneumatic-tired truck is 1500 pounds. The equipment is recommended for the lighter jobs requiring speed.

335—Metal Framing . . . Three brochures on the use of adjustable steel framing and related accessories are made available by the Unistrut Products Company. Brochure number one gives a general introduction to the principle and use of adjustable steel framing and contains numerous application photographs. The second one shows the application to bar and tubing storage racks, while the third brochure explains the use of concrete inserts.

336—Industrial Tires . . . The United States Rubber Co. offers an industrial tire manual carrying illustrations, descriptions and statistical information on its line of tires for industrial trucks. Also included is a table of maximum loads, information on maintenance and complete specifications.

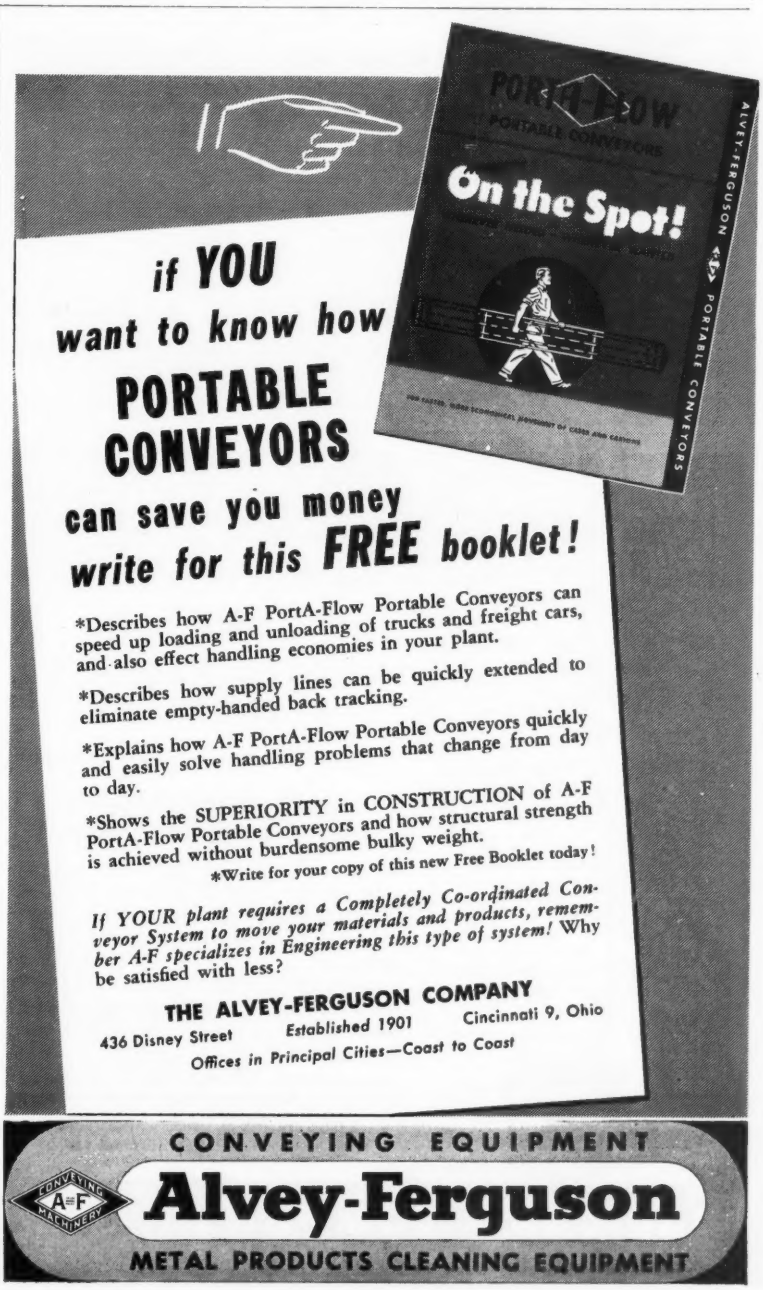
337—Magnetic Crane Control . . . Five types of A-C magnetic crane controls for handling any type of load are described in a 20-page illustrated booklet announced by the Westinghouse Electric Corp. The publication contains wiring diagrams, performance curves and an application guide to aid in selecting the proper control. D-C dynamic, A-C dynamic, counter-torque and reversing-plugging systems are also covered.

338—Combination Dolly-Truck . . . Over 78 different product handling applications for its combination dolly-truck are listed in the four-page folder offered by the Bruening Products Corporation. The unit consists of an 11-gage steel "diamond" platform fitted with caster wheels and an eye bolt at the front for towing. A telescoping handle arrangement and a 4" lifting lip permit the unit to be raised to the two front casters for conventional two-wheel hand truck use. Three platform sizes are offered, 23" by 18", 30" by 21", and 36" by 24".

339—Wheels . . . The Hutton Wheel Corporation describes its line of rubber-tired wheels (pneumatic and molded-on tires), and its steel frame platform trucks and two-wheel hand trucks. The products are illustrated with photographs and specification tables.

340—Industrial Models . . . The importance of the industrial model as an aid to present-day production and merchandising is described in a four-page booklet entitled "How Industrial Models Can Help Your Firm," which has just been issued by Stark Industrial Models. Pointing out that models "prevent costly production errors" and "make possible new ideas in merchandising and advertising," the booklet illustrates four general types of industrial models now being used and suggests the limitless adaptations possible in industry.

341—Electronic Control . . . The W. C. Robinette Company has prepared a descriptive folder illustrating its new electronic servo-mechanism. Operation of the unit is carefully described, outlining industrial applications where automatic control or regulation of processes or operations is practical.


PORTA-FLOW
PORTABLE CONVEYORS
On the Spot!
ALVEY-FERGUSON
PORTABLE CONVEYORS
if YOU
want to know how
PORTABLE
CONVEYORS
can save you money
write for this FREE booklet!
*Describes how A-F PortA-Flow Portable Conveyors can speed up loading and unloading of trucks and freight cars, and also effect handling economies in your plant.
*Describes how supply lines can be quickly extended to eliminate empty-handed back tracking.
*Explains how A-F PortA-Flow Portable Conveyors quickly and easily solve handling problems that change from day to day.
*Shows the SUPERIORITY in CONSTRUCTION of A-F PortA-Flow Portable Conveyors and how structural strength is achieved without burdensome bulky weight.
*Write for your copy of this new Free Booklet today!
If YOUR plant requires a Completely Co-ordinated Conveyor System to move your materials and products, remember A-F specializes in Engineering this type of system! Why be satisfied with less?
THE ALVEY-FERGUSON COMPANY
436 Disney Street Established 1901 Cincinnati 9, Ohio
Offices in Principal Cities—Coast to Coast
CONVEYING EQUIPMENT
CONVEYING MACHINERY
A-F
Alvey-Ferguson
METAL PRODUCTS CLEANING EQUIPMENT

over 90% OF YOUR MATERIAL HANDLING REQUIREMENTS

— can be met with

STANDARD EUCLID CRANES,

whether they are put to Special or General Purpose use. Standard Euclid Cranes are available in capacities of 3, 5, 7-1/2, 10, 15, 20 and 25 tons in various spans.

All detail parts are standardized and jig machined to assure interchangeability.

High grade, wide face, coarse pitch gearing.

•

Shafts short and heavy to withstand stress.

•

Anti-friction bearings throughout.

THE EUCLID CRANE & HOIST COMPANY
1362 CHARDON ROAD, EUCLID, OHIO

EUCLID CRANES AND HOISTS
Raise Profits

INDUSTRIAL TRUCKING FLOORS
Resurfaced to withstand any traffic . . .

with CAMP'S No. 7 INDUSTRIAL FLOOR RESURFACER

Tougher than Steel—Easy to Apply

COSTS ONLY $15.00 PER 100 SQUARE FEET

Camp's No. 7 is applied like cement over your present wood or concrete floors. A ¼ inch thickness resurfaces worn or rough concrete floors to withstand any traffic. Sets in three or four hours—ready for heavy trucking in 24 to 48 hours. Camp's No. 7 comes ready to mix—nothing else needed. Your choice of brown, red and natural dark gray.

Order a trial unit—you must agree it is the best resurfacer you have seen, or there will be no charge.

EVERY INSTALLATION UNCONDITIONALLY GUARANTEED

Further information describing this and other Camp's flooring material sent on request.

The CAMP COMPANY
6958 S. State St., Chicago 21, Ill., Triangle 4770

from COAST TO COAST

NASHUA BLANKETS . . .

(Continued from page 35)

grades is made and the containers are naturally at the same time prepared ready for the outbound vehicles. And this means that many of the orders may have to be held for several months. During the peak shipping season, when as many as three carlots of blankets may be shipped in a day—usually during June, July and August—the regular staff could not well cope with the assorting, packing and other operations. Thus "permanent" storage is better described as "pre-shipping" storage, since the period in the warehouse is determined by the delivery date set by the customer.

When the goods are needed for shipping, the containers are wheeled by hand trucks to a chute (there is an opening on each floor) and thus sent down by gravity to the ground-floor level. The end point of the eight-story-high chute, on the shipping floor, is a metal extension, or table, which is about six feet wide and 20 feet long.

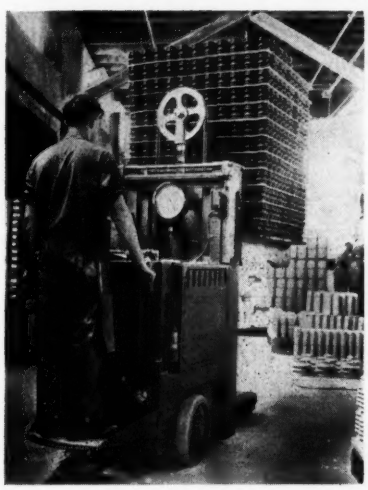
Four men, stationed on two sides of the chute table, palletize the cases on as many pallets spotted conveniently within reach. A 48" x 48" double-face hardwood pallet is used. The outbound freight cars are designated by alphabetic symbols (according to the destination) and the pallet loads are keyed the same way. That is to say, "B" pallet loads will go only in a "B" car, and so forth. This method of identifying the loads simplifies the operation for the truck operators serving the various cars on the 12-car capacity siding paralleling the shipping floor. Adoption of the pallet-fork-truck method has increased unit production per man-hour 100 per cent in the car loading operation. It has also brought this part of the work on the same high level of efficiency with that of the large conveyor system functioning in the room to the south of the shipping floor.

It can be seen from the foregoing that every detail in the well-engineered system of handling devices and methods has been designed to speed the flow of materials from production through the numerous operations (on different

floor levels) to the final destination in the outbound freight cars. It is not necessary, for example, for any of the packing department operators to lift a full shipping container. After the cartons have been returned to the department from "semi-seal" storage, the units advance successively over the feeder, the transverse packing and then the "U"-shaped outgoing conveyor line. Similarly, at weighing, the turnover machine, final sealing, and strapping the containers keep advancing over suitable gravity and/or power lines, with adequate controls at each key point to assure regulated flow. In the multi-story warehouse, too, the system of vertical and horizontal conveyors dispatches and returns the thousands of containers between all floor levels. And, finally, the gravity chute operation in conjunction with the pallet program speeds an enormous outbound volume during the peak shipping season with a marked absence of confusion, as well as with a marked economy of cost and effort.

PORCELAIN INSULATORS—WITH CARE!

INDUSTRIAL truck handling of shiny, smooth ceramic insulators at the LeRoy, N. Y. plant of Lapp Insulator Co., Inc., has greatly reduced production losses formerly caused by



***manual handling. Here, a 4,000-lb.-capacity platform truck moves a two-ton skid load of porcelain insulator spools, designed for 2,300-4,000-volt power distribution lines. Rubber-tired wheels also cushion the ride and contribute to reduced breakage.*—Courtesy, Electric Industrial Truck Assn.**

TO CUT YOUR COST

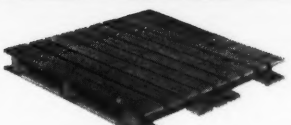
Whether you make delicate electronic appliances, foods, or heavy machinery, an Olson Conveyor System can be designed to meet your needs. Every phase of product-moving can be accomplished automatically, from the time raw materials arrive in the plant till the finished product is delivered to the shipping platform.

Gravity, Belt and Chain Conveyors
Subveyors—Spiral Chutes
Elevators—Hoists—Lifts

WRITE FOR FREE CATALOG

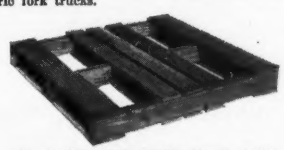
SAMUEL OLSON MFG. COMPANY, INC.
2418 Bloomingdale Rd. Chicago 47, Ill.

PROMPT SHIPMENT AT LOWEST PRICES ON ANY PALLET
ORDER FROM 1 CAR to 100 CARS!



No. 1—Stevedore, or Cargo Pallet. Non-reversible, double-faced, with over-hanging deck boards to permit use with sling.

No. 2—Standard Double-Faced Non-Reversible Pallet. Slatted deck design. Bottom boards are spaced to permit entry and elevation by either hand-truck or electric fork trucks.

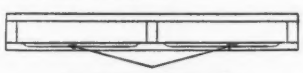


No. 3—Reversible Double-Faced Pallet. Both upper and lower deck boards are spaced to permit entry of pallet trucks.

What are *your* pallet requirements? Write, wire or phone for prices on our line. We believe we can offer a lower quotation than any other pallet company in the country . . . and *furthermore* make PROMPT SHIPMENT! Ozark Pallets are outstanding in constructions and utility. They are everything you demand in a pallet. Contact us *now*.

Representatives Wanted!

Attractive commissions can be earned by our sales agents. Get our proposition. Many good territories still open.



CHAMFER END BOARDS FOR EASY TRUCK ENTRY

OZARK PALLET COMPANY
P. O. BOX 63, BERGMAN, ARK. PHONE L. D.

So MANY *cannot be wrong .... about* MUCH*

Progressive manufacturers submit their materials handling problems to us with confidence because

(a) we have had over 40 years' experience.

(b) our clients are among the country's outstanding industries.

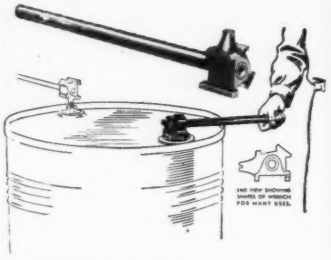
(c) we have no affiliation with manufacturers of equipment.

Clients are accepted only on the basis of a guarantee of positive results.

Would YOU like to know why so many are not wrong about Much?

*R. M. MUCH and ASSOCIATES
507 Fifth Ave., New York City
"You'll hear more about Much"

The *MORSE*
DRUM PLUG WRENCH



*IT'S HANDY—
IT'S FAST—
IT'S EASY to USE!*

● Instantly removes or tightens all sizes of plugs or bungs in steel drums. Steel alloy construction with 16" extra strong tubing handle. Shaped to fit 10 different plugs. Also available in non-sparking metal. Satisfaction guaranteed. Prompt shipment.

No. 61 Steel. Red enamel. Wt. 2 lbs.
Net price.....$2.10

No. 61-M Non-sparking. Gray finish.
Net price.....$3.15

Send for folder descriptive of entire line of drum, barrel and carboy handling equipment and accessories.

MORSE MANUFACTURING CO.
Dickerson St. Syracuse 2, N. Y.

For additional information on these products, write Dept. 5, Flow Magazine, 1240 Ontario St., Cleveland 13.

LIGHTWEIGHT CONVEYOR

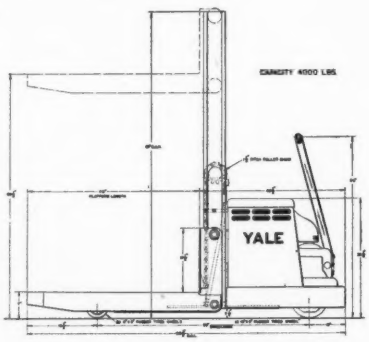
NP55—A lightweight portable power conveyor for handling all kinds of packaged material has

been announced by Material Movement Industries. Made of special lightweight alloy steel, which is said to be corrosion and abrasion resistant, the 10-foot model weighs only 291 pounds complete with power unit and under carriage. It can be easily moved by one man from one conveying job to another, the manufacturer states. Power is furnished by electric motor coupled direct to the gear reducer. Overall conveyor depth is 5½ inches. Belt width is 8 inches. Rear wheels of the undercarriage are solid. The front wheels are swivel casters. Either end of the 10-foot model may be raised to 6-foot height. The recommended carrying capacity is 40 pounds to the foot, distributed load.

POWERED HIGH LIFT HAND TRUCK

NP56—A new piece of equipment known as the high-lift platform model worksaver has been announced by The Yale & Towne Manufacturing Company. Two models are available: one with a platform which can get under a seven-inch skid and hoist it to a height of 66½"; the other with a platform which can get under an 11" skid and lift it to a height of 70½". Both models have a lifting capacity of 4,000 pounds. The 11" model has 10" diameter wheels under the load as well as at the drive end, for working over rougher floor and yard surfaces. The units can turn a right angle within 91", need only 54" aisles, and can swing within a circle of 95" radius. They can negotiate a nine per cent grade without "hanging up," the manufacturer states.

Other attributes are said to include independent motors for lifting and driving, automatic braking in the event of dropped handles or neutral positions of the driving controls, manipulation by fingertip controls located immediately beneath the hand bar grip, two forward and two reverse speeds, hydraulic-release-checks to cushion



descents, and drive controls which automatically return to neutral when finger pressure is released.

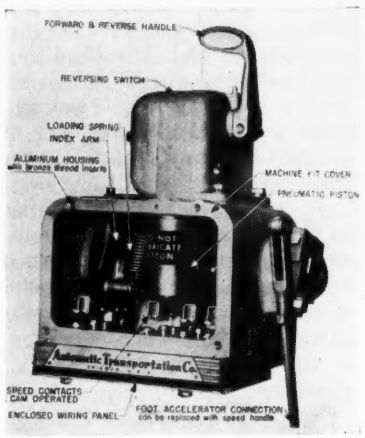
CRANE DOOR POSITIVE CLOSING

NP57—Positive power closing of large and small swing type crane

doors is accomplished by the use of powered closing arms, developed by the Fleming Steel Company. The manufacturer states that this device does away with the difficulty encountered with doors of this type which are closed only by the force of gravity. In operation, the lower door slides completely to the right where it engages a combination interlock. This unlatches the upper door which is then swung up into the open position by means of six heavy duty cables. In closing all operations are automatically reversed and the power closing arms force the upper leaf fully closed where it engages another combination interlock, releasing the lower door and permitting it to slide to the left and close, states the release.

PNEUMATIC BRAIN

NP58—The "Newmatic" controller, a pneumatic device, which operates as the electrical counterpart of the automobile automatic

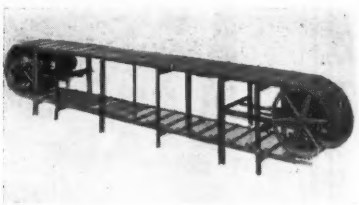


gearshift, has been adopted as standard equipment by its designers, The Automatic Transportation Company. It will be installed on all the company's 1947 trucks. The new control system made its appearance on Automatic's new Skylift fork truck, the first of the company's 1947 line. The controller provides automatically timed sequence of four speeds in forward and reverse. It makes jerky movement impossible, thus eliminating tire slippage and minimizing spillage of loads, according to the release.

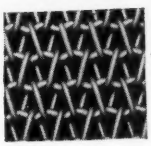
It is said to reduce the peak electric current surges by two-thirds, extending the service life of the entire electrical system almost indefinitely. The control enables the operator of a truck to select any one of the four forward or reverse speeds at will. Regardless of the speed selected, however, the controller starts the truck in low speed and passes automatically through sequence to the faster speed selected.

STAINLESS STEEL CONVEYOR

NP59—The Steel-Parts Manufacturing Company announces the addition of stainless steel belt links to its standard models of all-steel belt conveyors. Where sanitary



conditions are a major factor, as in food handling, the links are said to be particularly valuable. They



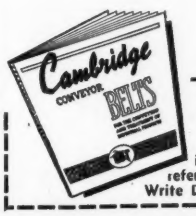
Close-up showing alternate spiral construction and crimped wire connection of Cambridge Balanced Belting.

Assures

Uniform Operating Economy

This installation, consisting of two belts, shows the advantages of Cambridge Balanced Belting. Here, a feeder belt carries heat resisting ware to front of annealing lehr. An automatic arm pushes the ware into position on a second belt, which passes through the lehr.

The smooth, non-bulging carrying surface of Cambridge Balanced Belting insures uniform loading. Low thermal capacity of this efficient metal belting lowers fuel costs. Its uniform ware support reduces breakage. In your own operations, too, Cambridge Balanced Belting assures greater operating efficiency and economy. Write Dept. 20 for full details.



Free...
This valuable, illustrated handbook is a complete, practical reference for all belt users. Write Dept. 20 for your copy.

CAMBRIDGE WIRE CLOTH CO.
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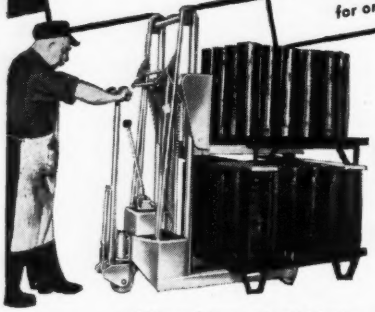
Boston • New York • Baltimore • Pittsburgh • Detroit • Chicago • St. Louis

HIGH-Lift when you need it!

Plus

a light maneuverable easy-handling truck for ordinary operations!



LYON-Raymond Hydraulic HIGH-LIFT TRUCK

- Lifts and transports skid loads . . . and because of wide elevating range
- Tiers for space-saving storage

Combines the functions of several pieces of equipment in a single, easy-to-handle Hydraulically-operated truck. Places tote boxes, offers rigid support for machine work, and positions! Learn how you can save time, money, and eliminate hazards in your plant this work-saving way.

WRITE FOR DESCRIPTIVE LITERATURE TODAY

LYON-Raymond Corporation 590 Madison St. Greene, N. Y.

Material Handling Equipment . . . Engineered Hydraulic Devices

ROUSTABOUT CRANE

Two men with this mobile load-hustler are a whole work force in your plant and yard—fast action with hook or magnet, loads to 7½ tons. Flexible performance, built for years of overwork. Save costly delays and man-power . . write for the yard-profit facts.

THE HUGHES-KEENAN COMPANY
648 NEWMAN STREET . . . MANSFIELD, OHIO

ROUSTABOUT CRANE

Roustabout Cranes
By Hughes-Keenan

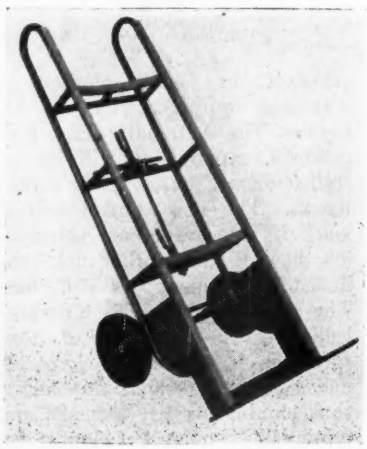
Load-Handling Specialists Since 1904

provide a highly polished, smooth surface that helps eliminate dirt and grime. It is claimed that the belt links are completely non-rusting and non-corrosive so that they may be moved through areas of moisture, water or acids without their being affected. The stainless steel links are available in standard models, and the dimensions are optional in accordance with the dimensions of the individual conveyor.

Each stainless steel link is connected to the next with a flexible "Indian grip" of steel, allowing insertion of new plates for cleaning or replacement. The entire conveyor is constructed in standard 5 or 10-foot sections, any of which can be removed from or added to the unit as desired.

APPLIANCE TRUCK

NP60—A two-wheel hand truck, known as the Easload, is announced by the Colson Equipment & Supply Co. One of the features claimed by the manufacturer is that the entire weight of the load rests on the 10-inch rubber tired roller-balanced wheels. When the truck is erect, the wheels lock in a forward position for loading. As the load is picked up, a foot pedal releases the wheels and they swing back, locking in balanced position to carry the load. Small rubber wheels under the toe plate assist in loading and unloading. A double ratchet is provided for clinching either one or two 12-foot straps around the appliance.

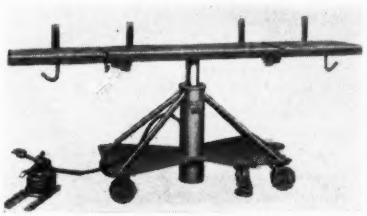


Full protection to appliances is gained by rubber frame protectors. Rubber-covered axle nuts avoid damaging other merchandise and

furniture when the truck is in tight spots. This truck is built of all-welded steel with tubular frame. It has a capacity of 2000 lbs. and weighs 64 lbs.

STRIP AND SHEET FEEDING TABLE

NP61—For feeding strip or sheet metal to shears, rolling mills, punch presses, and similar applications, LYON-Raymond Corporation offers a specially adapted hydraulic elevating table. It is designed to accommodate bundles of stock, loaded by means of overhead hoists

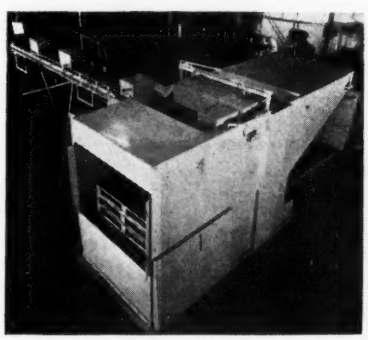


or fork trucks. The release states that its elevating feature will enable a machine operator to keep stock at the desired height for feeding into dies or shears and will eliminate awkward manual handling and the bending of stock. The table is portable.

The hydraulic pump is joined to the central cylinder by flexible hose which permits placing of the pump in the most convenient position. The table top consists of one rigid section, of same length as the base, plus two removable extensions designed to support longer loads. If it is desired to store the table in a minimum space the extensions are removed by simply lifting to a vertical position.

PALLETIZING MACHINE

NP62—The Palletizer being manufactured by Production Aids, In-



corporated, is a machine for the purpose of automatically loading

HARDWOOD – STEEL – ALUMINUM

HARDWOOD–STEEL–ALUMINUM

Let Us Supply You

with

THE RIGHT PALLET

for your job

at the *Right* Place — at the *Right* Time

Pallets Made of Hardwood — Steel Aluminum

MAGNESIUM ALLOY DOCKBOARDS
L C L PALLET BOXES

Learn the economy of a rental program for the entire materials handling system and how it can be arranged.

Mill connections in Ohio, Pennsylvania, New York, Virginia, Georgia and Arkansas.

HARDWOOD–STEEL–ALUMINUM

WIRE OR WRITE FOR FURTHER INFORMATION

PALLET SYSTEMS, INC.

GUARDIAN BUILDING
CLEVELAND 14, OHIO

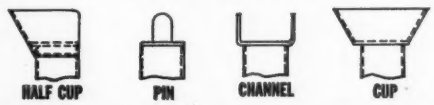
THE SKY'S THE LIMIT — OR NEARLY SO WITH RACKS ARRANGED FOR EASY STACKING!

We specialize in the manufacture of storage and tiering racks, pallets conveyor baskets, wheeled racks, etc. made to solve the customer's individual material handling problems.

Illustrated above is a typical rack of square tubular steel. Combining light weight with adequate strength, a rack of this type is ideal for users of fork trucks and those wishing to stack racked material high in storage areas.

Our engineering department is always available for assistance in the design of equipment. Tell us your needs. No obligation, of course.

VARIOUS TYPES OF TIERING DEVICES USED



PERKINS BRIDGE & SUPPLY CO.
FLUSHING, MICHIGAN

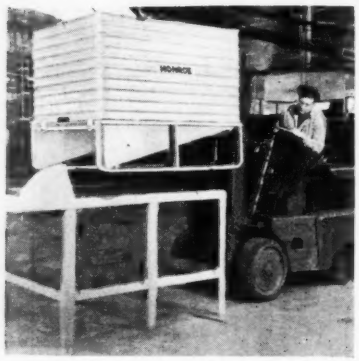
packages from a conveyor line on to empty pallets and to cross-tie the packages to make a complete compact pallet load ready to be picked up by a lift truck, to be placed in a warehouse, car or truck for shipment.

The company states that packages or cartons can be assembled or stacked on the pallet in variously stacked arrangements, according to the size and the number of packages to be loaded. In the rear of the machine a sufficient number of pallets can be placed to enable the machine to operate on an average use basis.

The machine is completely automatic in operation and is said to include automatic safety provisions.

DROP-BOTTOM SKID BOX

NP76—The Monroe Auto Equipment Co. now offers a drop-bottom skid box, designed to eliminate slow, tedious manual emptying of bins filled with small parts. The saving is said to be more than 20 per cent in factory handling costs.



The new unit, an innovation, empties the contents by gravity through a hinged bottom supported by two heavy, removable pins. The new boxes may be used with ordinary lift trucks and are constructed of corrugated hot rolled steel. They are available in six sizes with capacities ranging from 1500 to 4000 pounds. Each box is also equipped with skids for floor unloading.

Offered separately as companion equipment are stands, like the one shown, which hold the boxes at a height of 41 inches to provide handy waist-high work tables which hold the material when released. These stands are supplied in sizes built for tiered loads from 4,500 to 12,000 pounds.

New! LIGHTWEIGHT PACKAGED MATERIAL CONVEYOR

Tote-All the light conveyor that can take it!

Tote-All PACKAGED MATERIAL ZEPHYR

features

- Length 10 ft.
- 10-in. belt
- Special alloy steel-corrosion and abrasion resistant
- Weighs only 291 lbs. (complete with power unit and undercarriage)
- Power unit—electric motor coupled direct to gear reducer
- Rear wheels, solid—front, swivel caster
- Either end of 10-ft. model may be raised to 6-ft. height

HANDLES, boxes, cartons, crates, bags . . . easily carries 40 lbs. to the foot distributed load. Use this husky, portable conveyor for unloading cars and trucks, stacking materials in warehouses and as a power booster for gravity conveyors. Operates from ordinary lighting circuit. Does the work of several men in a fraction of the time . . . helps you meet today's rising labor costs and shrinking labor market. Get full details on this new Tote-All Packaged Material Zephyr today—write for Bulletin F-12.

A product of MATERIAL MOVEMENT INDUSTRIES 310 S. Michigan Ave. Chicago 4, Ill.

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. . . for lowest cost material handling

The MOTO-TRUC MOTORIZED HAND TRUCK

FIRST with Front Wheel Drive

FIRST with Complete Control in Handle

FIRST in Small Turning Radius

FIRST with Those Who Compare

12-VOLT PALLET TRUCK

This latest model Moto-Truc Pallet Truck has lower line of gravity for stability, and is operated by 12-volt motor and battery.

ALL CONTROLS MOUNTED IN HANDLE. You get two speeds forward and two reverse, by a twist of the wrist . . . lifting and lowering by push buttons in ends of handle.

TURNING RADIUS is up to 11" smaller than any other truck of this type.

SAFETY RETURN HANDLE gives positive dead man control.

The Moto-Truc Co.
1959 East 59th St.
Cleveland 3, Ohio

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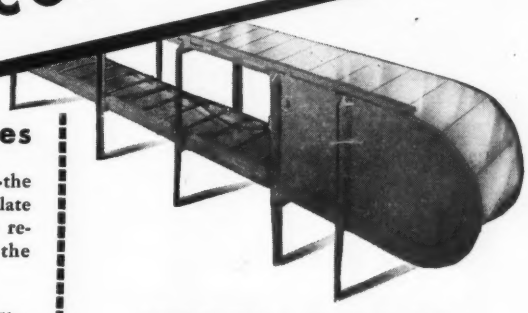
MOTO-TRUC Pallet, Platform and Hi-Lift Trucks!

CHOOSE AN

ALL-STEEL CONVEYOR



The *Steel Parts* Conveyor above is being used in processing sponge rubber. It's a sticky business, and the repeated cleanings necessary led to the rapid deterioration of ordinary conveyor belts. The ALL-STEEL belt, however is cleaned with strong detergent once a week—and is still as good as the day it was installed.

Check This List of Exclusive Advantages

✔ ALL-STEEL—for strength and durability. There's never any sag or slip in this ALL-STEEL belt. A perfectly flat working surface is assured at every point along its entire length.

✔ PRE-ENGINEERED—but adaptable to your application. *Steel Parts* conveyors are *pre-engineered* at the factory in a variety of standard models—light or heavy, narrow or wide. The basic-type conveyor for your job is then specially adapted to suit your particular application.

✔ ENGINEERED FOR ECONOMY—*Steel Parts* conveyors contain a minimum of moving parts. The belt is the chain—the chain the belt. Should a belt plate become damaged, you simply replace that plate instead of the entire belt.

✔ EASY TO CLEAN—The *Steel Parts* conveyor presents a flat, easy to clean surface that will withstand any amount of scouring or scrubbing. It is available with a stainless steel belt for special applications.

✔ EASY TO INSTALL—The *Steel Parts* conveyor is completely fabricated at the factory, is delivered in sections that are easily assembled by your own men.

For illustrated descriptive booklet mail this coupon today!

STEEL-PARTS MANUFACTURING CO.
Division of Blackstone Manufacturing Co.
214 S. MORGAN STREET, CHICAGO 7, ILLINOIS

Please send descriptive booklet.

Name_____ Position_____

Firm_____ Address_____

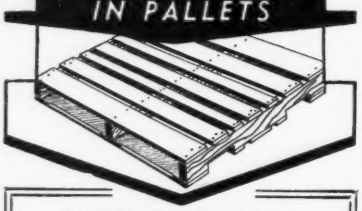
City_____ State_____

HERE'S PROOF OF EFFICIENCY*

1. Electrical Manufacturer increases production over 100% with *Steel Parts* ALL-STEEL conveyor.
2. Manufacturer of air cleaners cuts direct labor costs by one dollar per unit with *Steel Parts* ALL-STEEL conveyor.
3. *Steel Parts* ALL-STEEL conveyor pays for itself in three months through savings at textile plant.

** Names furnished on request.*

EVERYTHING YOU DEMAND IN PALLETS



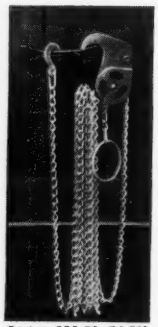
• STRENGTH •
• TOUGHNESS •
• LONG LIFE •
• ECONOMY •

Tell us your needs! All types of pallets delivered promptly. Satisfaction guaranteed. Whatever your materials handling problem we can supply the answer as far as pallets are concerned. Get our prices. Address inquiries to

GRASTY PALLET CO.
ORANGE, VA.
TELEPHONE: 2541

WORLD'S EASIEST WAY TO OPEN ANY BOX CAR DOOR

MONARCH ONE MAN CAR DOOR OPENER



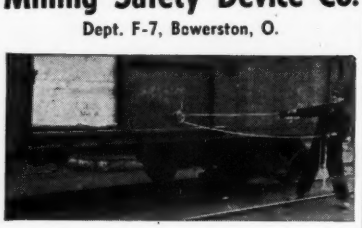
ONLY $22.50 EACH
F.O.B. Bowerston

One man can open the most binding, balky box car door with the Monarch Car Door Opener. Get greater safety . . . speed loading and unloading schedules . . . order an ample supply to fill your needs today!

● No strained muscles. No slips or falls. No broken arms, legs or mashed fingers. No fatalities. No time wasted. No "gangs" needed. No time loss.

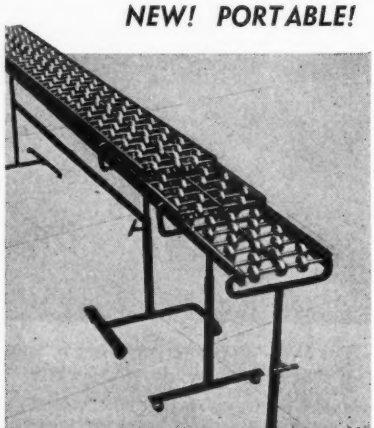
Write for free descriptive literature.

Mining Safety Device Co.
Dept. F-7, Bowerston, O.



Wilkie
Telescopic
CONVEYOR

NEW! PORTABLE!



ADJUSTABLE!

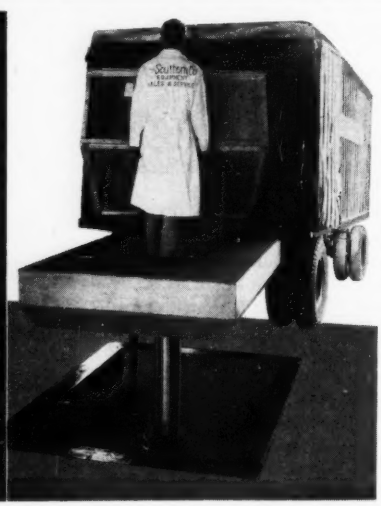
Here's a new gravity conveyor (Patent applied for) that *folds up* to a convenient 10 ft. length—can be easily, quickly moved from one scene of action to another. Simply wheel it to the spot, put on brake, pull out to the desired length and you're all set. Adjustable also in height and pitch. Also, same telescopic feature can be built into a conveyor system. WRITE TODAY FOR COMPLETE INFORMATION AND PRICES.

SPECIFICATIONS:

Frame construction, ½ x 1½ x 3/16 channel iron; ball bearing skate wheels, easily adjustable legs with 3" casters (only one leg per section to adjust); pressure brake lock; sizes 10 to 20', 10 to 30', and 10 to 40'.

WILKIE COMPANY
Skate Wheel and Roller Conveyors
5520 ARCH STREET
PHILADELPHIA 39, PA.

YOU CAN LIFT AND LOAD
Faster—Cheaper



WHY THOUSANDS NOW USE LEVELATORS

They cut costs by doing lifting jobs faster with less manpower. Save plant space, too . . . no need for ramps. Loads up to 50,000 pounds lifted directly from plant floor to trucks, freight cars, machines or different levels. Powerful hydraulic jack operated by electric pump or compressed air. Safe, dependable, economical. Installation simple and inexpensive. Write for Catalog RE-201.

ROTARY LIFT CO., 1054 Kansas, Memphis 2, Tenn.

Rotary LEVELATORS

ON THE PALLET . . .

(Continued from page 21)

Richmond, Virginia. The new office will be under the direction of Winston R. Connors.

* * * *

THE Northwest Engineering Company, builders of shovels, cranes, draglines and pullshovels, announces the removal, on May 1st, of its Executive and Sales Offices to new and larger quarters in the Field Building at 135 South La Salle Street, Chicago, 3. This change has been occasioned by the need for additional space due to the increase in the company's business. Offices were formerly at 28 E. Jackson Blvd., Chicago.

* * * *

THE principals of Sy-Co Engineers, New York City, consultants on industrial construction, have announced the formation of the Sy-Co Corporation. The new firm will specialize on the design and installation of automatic conveyor systems. Gustav A. Syverson, formerly in charge of design for the Materials Handling Department of the American Gas & Electric Service Corporation of New York, has been appointed consultant to the new corporation.

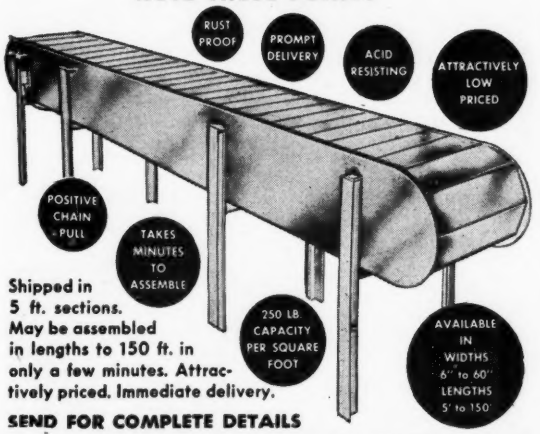
* * * *

THE Ohio Equipment Co., Cleveland, announces that is has been appointed sales representative in the Northern Ohio territory by the following two

PREFABRICATED ALL ALUMINUM ALLOY

MERCURY CONVEYORS

NOTE THESE POINTS


RUST PROOF
PROMPT DELIVERY
ACID RESISTING
ATTRACTIVELY LOW PRICED
POSITIVE CHAIN PULL
TAKES MINUTES TO ASSEMBLE
250 LB. CAPACITY PER SQUARE FOOT
AVAILABLE IN WIDTHS 6" to 60" LENGTHS 5' to 150'

Shipped in 5 ft. sections. May be assembled in lengths to 150 ft. in only a few minutes. Attractively priced. Immediate delivery.

SEND FOR COMPLETE DETAILS

DEALER OPPORTUNITIES OPEN—ADDRESS DEPT. FM

PATRON TRANSMISSION COMPANY
129 GRAND STREET • NEW YORK 13, N.Y.

Another Addition to the IRONBOUND FAMILY...the

FLO TRUK

STURDY • VERSATILE ECONOMICAL

The Ironbound FloTruk is a sturdy all-purpose unit. Along with other well-known Ironbound materials handling equipment it will be available from stock. Such inexpensive manpower conserving units can be adapted to meet particular production requirements. Ironbound engineers will be glad to analyze and discuss your materials handling problems with you. Savings up to 40% of your factory payroll can be affected thru proper application of the correct materials handling equipment. Call Ironbound today. Write for illustrated literature.

THIS MARK IDENTIFIES GENUINE IRONBOUND MATERIALS HANDLING EQUIPMENT

BOUND TO BE BETTER Ironbound MATERIALS HANDLING EQUIPMENT

IRONBOUND
BOX & LUMBER COMPANY
Materials Handling Division
50 HOFFMAN PLACE HILLSIDE, N. J.

SKIDS • SEMI-LIVE SKIDS
DOLLIES • FLOOR TRUCKS

companies: The Weaver Machine Company of York, Pennsylvania, manufacturers of the JAWCO Industrial Floor Liner, and The Material Movement Industries of Chicago, Illinois, manufacturers of portable material handling equipment. The most popular unit of equipment in this line is the well known Tote-All Conveyor.

Both sales and service in connection with the Material Movement account will be handled by the Cleveland and Akron offices of the Ohio Equipment Co.

* * * *

READING Chain and Block Corporation of Reading, Pa., has appointed Yarrington & Johns, Inc. of Baltimore, Md., as representative to cover the states of Delaware and Maryland and the cities of York and Lancaster, Pa.

* * * *

E. J. HEIMER, president of Barret-Cravens Co., Chicago, announces the formation of a new organization that will serve the San Francisco-Oakland area. The organization will be known as the Heimer Equipment Co., at 1247 48th Ave., Oakland 1, Cal. It will be exclusive distributors of the complete Barret-Cravens line. In addition, the Heimer Equipment Co. will also handle other lines, and offer complete sales and service facilities. E. J. Heimer will continue as president of Barret-Cravens, spending three months in Chicago and the alternating three on the West Coast. The new company will be managed by his son, who's a graduate engineer and a former officer with the Seebees in the South Pacific.

PALLETS
AND SKIDS

All types of PALLETS and SKIDS manufactured to your specifications for YOUR particular need. Strongly built of Hardwood, Hardened Steel. Drive Screw Nails used throughout!

Write or Phone Delmar 1111 Dept. C for Free Estimate on your job. Absolutely No Obligation

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LUMBER COMPANY

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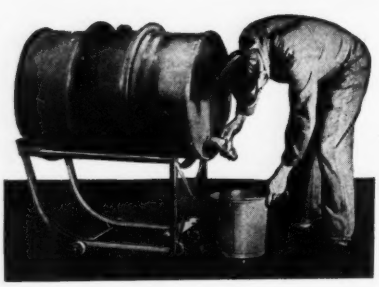


DRUM and BARREL RACK

ACCOMMODATES ALL SIZES
ONE-MAN OPERATION

Provides safe, easy handling of drums and barrels, eliminates waste and saves time.

Rigidly constructed. Equipped with heavy duty wheels and swivel casters.

Specify Style #54
. . . . $9.00 Each

IPCO Safety Equipment for all Industries
INDUSTRIAL PRODUCTS COMPANY
2823 N. FOURTH STREET · PHILADELPHIA 33, PA.

STRAPPING QUIZ:

Q. *Which strapping tool handles most sizes of strapping?*

A. *The* STEELBINDER

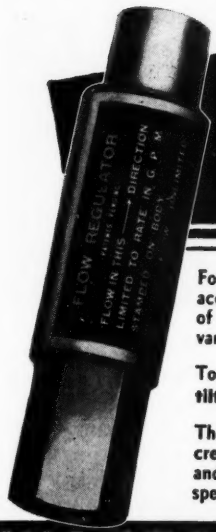
One Steelbinder Tool accommodates ⅜", ½", ⅝" and ¾" strap of any thickness up to .028". Here's how this *exclusive* Steelbinder advantage keeps your strapping costs down:

- You use light strap for light jobs
- You use heavy strap for heavy jobs only
- You make far better use of strapping salvaged from incoming crates.

Remember, too, Steelbinders "tie a tighter tie" on all shapes, even round . . . cut off the strap automatically . . . tie on top or side, with or without a base for resting the tool, a big advantage in maintenance strapping.

write for
a sample of
• STUR-D-STRAP
For Medium and Light Duty Strapping

A.J. Gerrard & Co.
221-A NORTH LA SALLE STREET, CHICAGO 1, ILL.



CONSTANT FLOW REGULATOR

A must for lift-truck safety.

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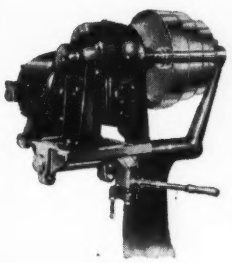

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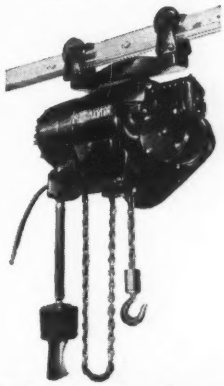

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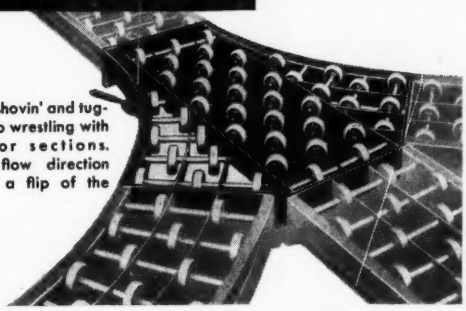

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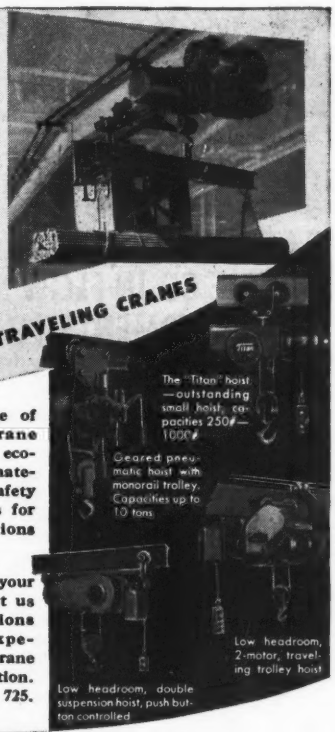
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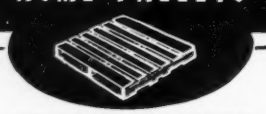

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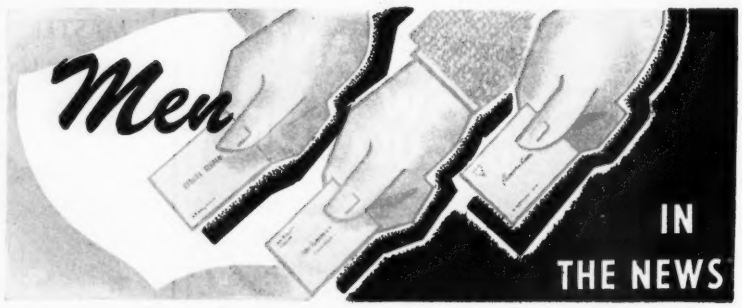

THE opening of a factory sales and service branch in Camden, N. J. is announced by Lester M. Sears, President of the Towmotor Corporation. The sales activity will be under the supervision of Ray M. Scott, Jr. who has been associated with the Towmotor Corporation in various key positions for several years. William Wilhelm, Service Manager, will be in charge of complete repairs and parts facilities and will be assisted by a staff of factory trained personnel. The new office will serve Eastern Pennsylvania, New Jersey and Delaware.

GORDON J. BERRY, Vice President and Sales Manager of The Electric Products Company, announces the appointment of Robert H. Ehret to the position of Assistant Sales Manager. Ehret will be responsible for handling headquarters sales negotiations. He joined The Electric Products Company in 1945, after 14 years of selling, applying and installing apparatus for prominent electrical manufacturers.

WILLIAM F. MOIST has joined The Louden Machinery Company, Fairfield, Iowa, as Advertising Manager for the Monorail Division. Moist has a general background in advertising, promotion, newspaper and publicity work.

JAMES J. BATES has been appointed Chief Metallurgist for the Hyster Company. After graduating from Washington State College, he spent eight years as a metallurgist with Westinghouse in Pittsburgh. As Chief Metallurgist for Hyster, Bates will be in charge of materials specifications and heat treating for the company's three plants—Portland, Oregon, Peoria and Danville, Illinois. His headquarters will be in Portland.

FORMATION of the Sage Manufacturing Co. has been announced by George Greenberger, founder. The Sage organization will manufacture casters, hand trucks and a complete line of gravity wheel conveyors. Greenberger has done extensive work in the development of gravity wheel conveyors. For many years he served as superintendent of the J. W. Clement Co.

E. C. LOW, Vice President in Charge of Sales of John A. Roebling's Sons Company, announces the appointment of A. R. Robinson as Manager of the company's Seattle Branch. Robinson joined the Roebling Company in 1936 as a salesman in the Portland Branch

representing the company in the logging, marine and contracting industries. A graduate of Oregon State College in 1924, he began his career in engineering and subsequently engaged in contracting work.

THE Board of Directors of Tel-Autograph Corporation elected Dwight G. W. Hollister as chairman of the board. Hollister will continue as president and director of Business Statistics Organization, Inc., together with his other business activities. Robert L. Spotts, formerly executive vice president of Tel-Autograph, has been elected a director and has been elevated to the presidency of the Corporation.

THE Electric Products Company has established a Cleveland District Office with headquarters at the factory. This district is to be headed by G. J. Doss. This new District Office will handle all sales and service negotiations in the territory, which consists of Western New York and Pennsylvania, Ohio, West Virginia, Kentucky, and Tennessee. Doss brings to his new position a broad experience in electrical sales and engineering, most of which has been in this same trading area.

WILLIAM E. HERB, eastern district manager, has been promoted to general sales and advertising manager of the Gifford-Wood Company, Hudson, New York. Walter G. Engler, western manager, has assumed the position of eastern district manager, with offices in the Graybar Building, New York City. William J. Chambers has taken over as western district manager with offices in Chicago. Mr. Herb joined Gifford-Wood in 1916 and has represented the company in both eastern and western districts. He has held the position of eastern district manager since 1930. He takes up his new position in the company's general offices. Engler has been associated with Gifford-Wood Company since 1929.

APPOINTMENT of Louis D. Arroyo as export manager of Speedways Conveyors, Inc., manufacturers of gravity and material equipment, was recently announced. From 1936 to 1942 Arroyo was export manager of Liquid Carbonic Corp., where he supervised all foreign sales and services, sales promotion, appointment of agents and distributors, preparation of machinery contracts, catalogues, service manuals, and advertising. Previously, he was assistant export manager of Canada Dry International where he supervised foreign franchise bottler requirements. He now heads a newly expanded department which includes carefully chosen representatives in many foreign countries. Under his guidance a well-informed home office staff devotes itself exclusively to the special requirements and handling of export orders and shipment.

APPOINTMENT is announced by E. S. Evans, Jr. president of the Evans Products Co., Detroit, of Kenneth J. Tobin, nationally known inventor of railroad supplies and loading devices. Tobin will promote sales of railroad loading equipment manufactured by the Loading Division of Evans Products Company, Plymouth, Michigan. He will center his activities in behalf of Evans from his offices in Chicago. A registered patent attorney, as well as an engineer, he has invented and patented over 150 devices, the majority of which apply to railroad supply and loading. From 1924 to 1947 Tobin was an executive of the Camel Sales Company, beginning as mechanical engineer and rising to vice-president in 1932.

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A PAPER ON THESE OR RELATED SUBJECTS MAY BE A PRIZE WINNER!

TO stimulate greater interest in the development of material handling cost control methods — a subject of vital importance to industry — FLOW is sponsoring the industry-wide "Cost Facts" Contest. Papers may be entered which describe any type of installation of material handling equipment, regardless of size, that has saved money. Since this is a contest based on facts, grammatical skill will have no bearing on the decision of the judges.

Papers submitted (they may be of any length) will be judged on (1) the analysis of the cost factors entering into the installation described, with details of the methods used in measuring cost savings. (2) the evaluation of the efficiency of present methods over past methods, and (3) the technical accuracy and completeness of the entry. Pictures, charts and layout drawings are necessary to the cost analysis presentation.

WHAT MAY BE ENTERED

Manuscripts may describe the cost factors entering into any type of material handling installation for either an entire plant or a single department.

WHO MAY MAKE ENTRIES

This competition is open to an employee or engineer of any company EXCEPT manufacturers or distributors of material handling equipment. Members of the FLOW staff cannot compete.

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Where the entrant requests it, we will keep published manuscripts anonymous as to author or company.

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First Prize	$500.00
Second Prize	$300.00
Third Prize	$200.00
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IN EVENT OF TIES, DUPLICATE AWARDS WILL BE MADE

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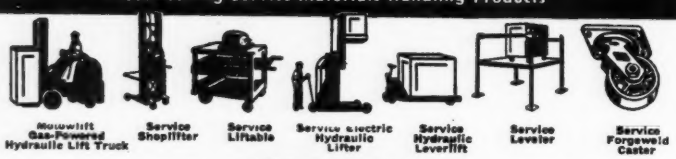

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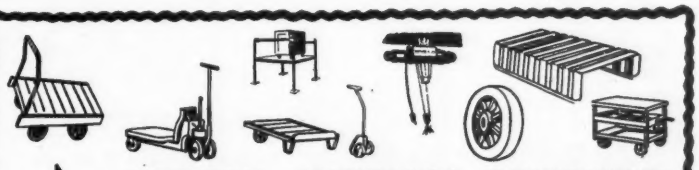
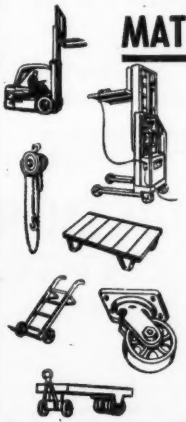


MATERIAL HANDLING EQUIPMENT



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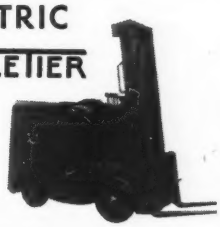

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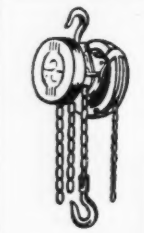
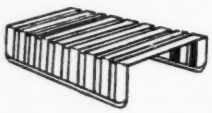

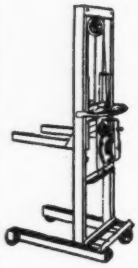

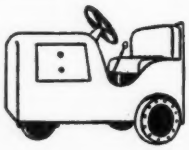

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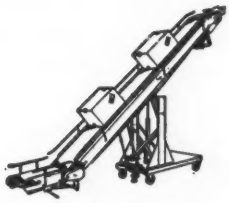

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(Continued from page 18)

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These brief case studies illustrate the importance of the proper grab. The grab that is correctly engineered to the job saves space, makes for safe working conditions, increases efficiency through greater productivity of cranes and hoists, and contributes to better personnel relations because men do not have to perform muscle-straining work.

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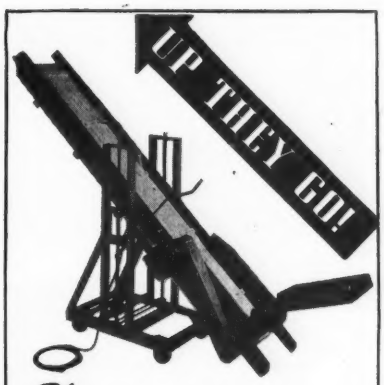

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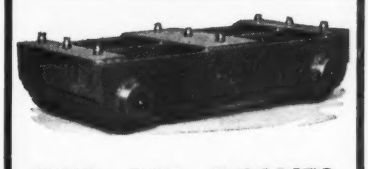

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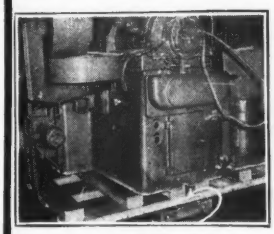

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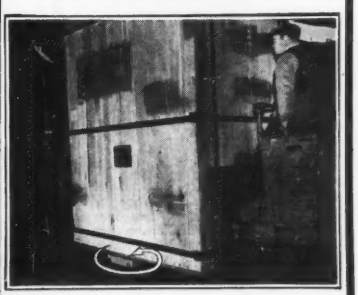

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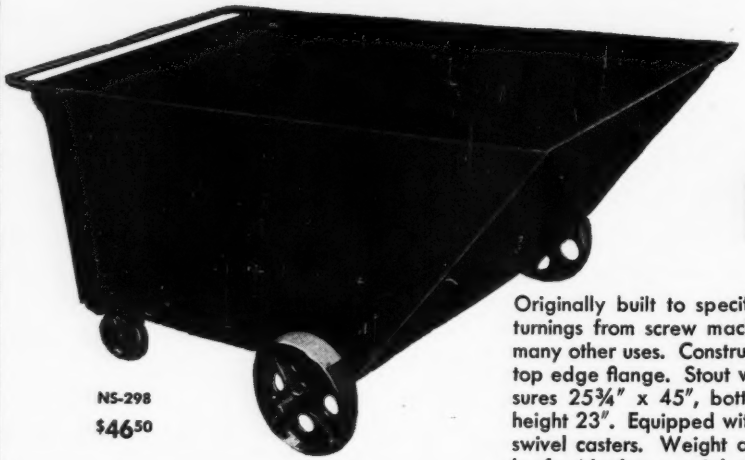

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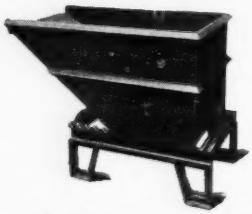

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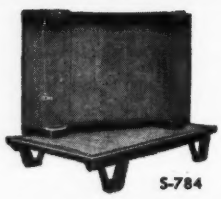

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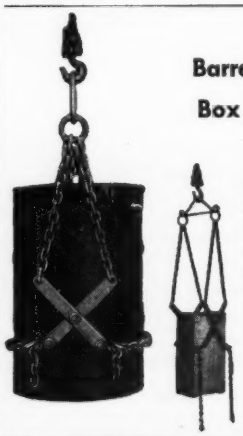

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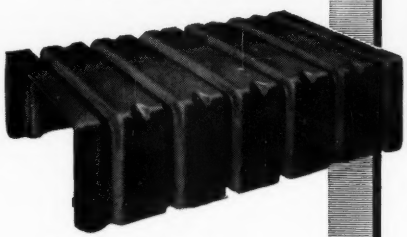

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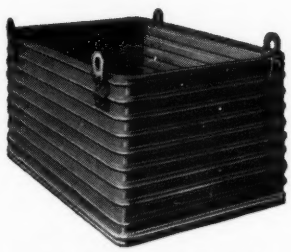

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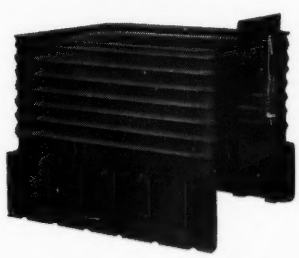

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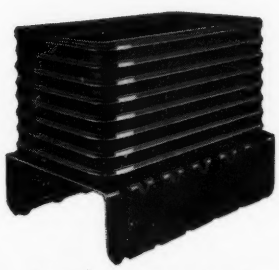

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there's a Truscon Answer for it!

● The jumbled, helter-skelter handling and storage of materials, parts and finished products has no place in today's efficiency plan for profits.

The slow piece-by-piece handling and moving of materials in any step of your manufacturing process, from raw materials to finished product, is costly throughout the day. Because of long experience in the materials handling field, Truscon has a wide range of steel boxes and steel skids that will exactly fit your needs. Write for the Truscon catalog of materials handling equipment, to help you plan a traffic system that will encourage greater output per man hour of labor.

Truscon has field men who have helped solve many materials handling problems, and can be of helpful assistance to you. In the competitive period of industry that lies ahead, you will benefit in many ways from Truscon Steel Boxes and Steel Skids—look to Truscon to help you now.

TRUSCON

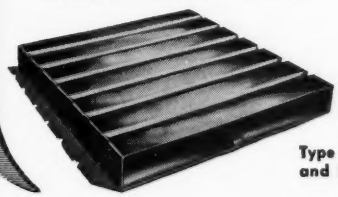
STEEL COMPANY

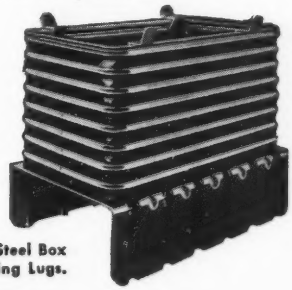
Pressed Steel Division

6202 TRUSCON AVENUE • CLEVELAND 4, OHIO

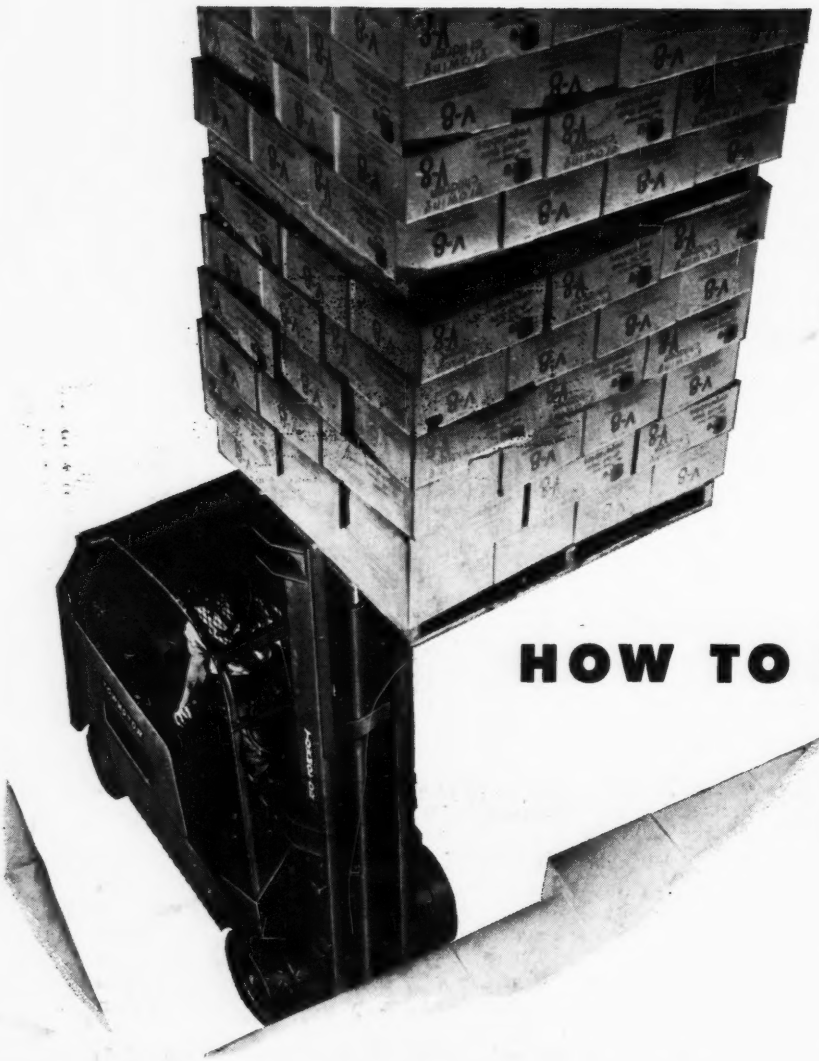
Subsidiary of Republic Steel Corporation

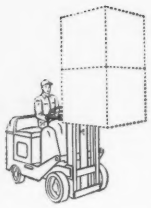
Truscon Double Face Steel Pallet.





Type PB-120T. Truscon Steel Box and Platform with Tiering Lugs.





HOW TO WAKE UP SLEEPY STORAGE

In plants where manual or obsolete handling methods are still in use, up to one-half of the available storage space is always idle. Towmotor Fork Lift Trucks, lifting and stacking materials and products to 20-foot heights, put this overhead space to work.

Towmotor Fork Lift Trucks and Accessories will wake up sleepy storage in your plant . . . provide systematic storage that simplifies stock control, reduces inventories and accelerates lagging production. A Pocket Catalog listing every Towmotor Fork Lift Truck and Accessory is yours on request. Towmotor Corporation, Division 8, 1226 E. 152nd St., Cleveland 10, Ohio.

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